CALIFORNIA
Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS

# CEQA SCOPING

# Organochlorine Compounds TMDLs

## Upper and Lower Newport Bay
## San Diego Creek


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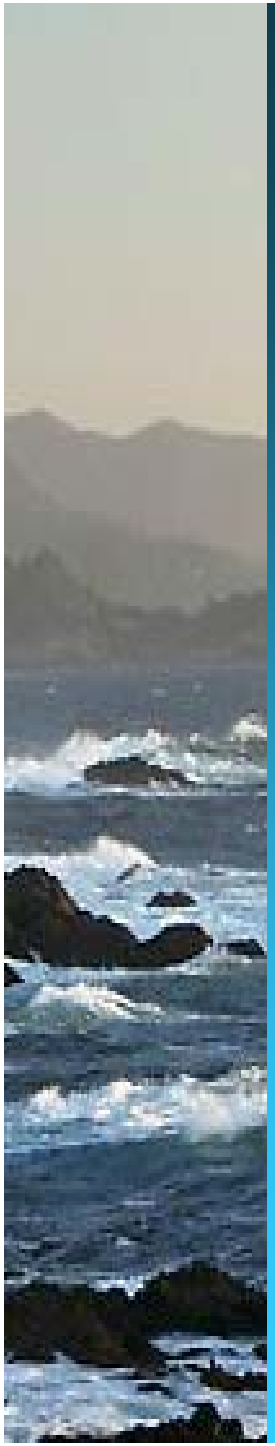
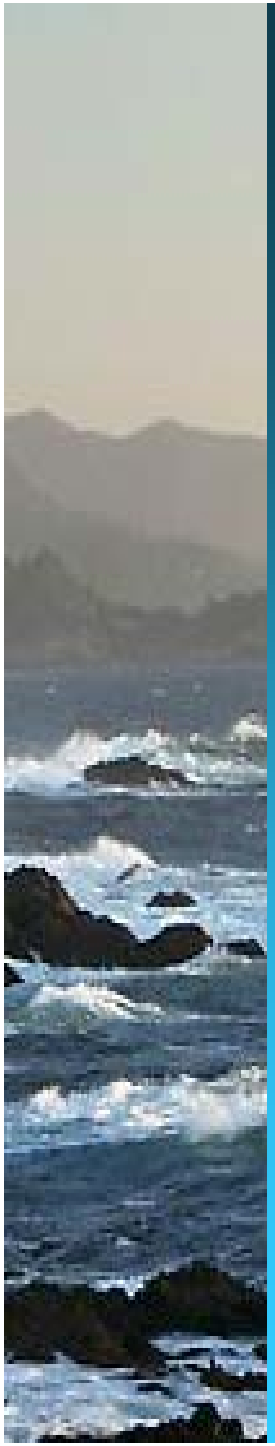
**SARWQCB**


**August 9, 2006**



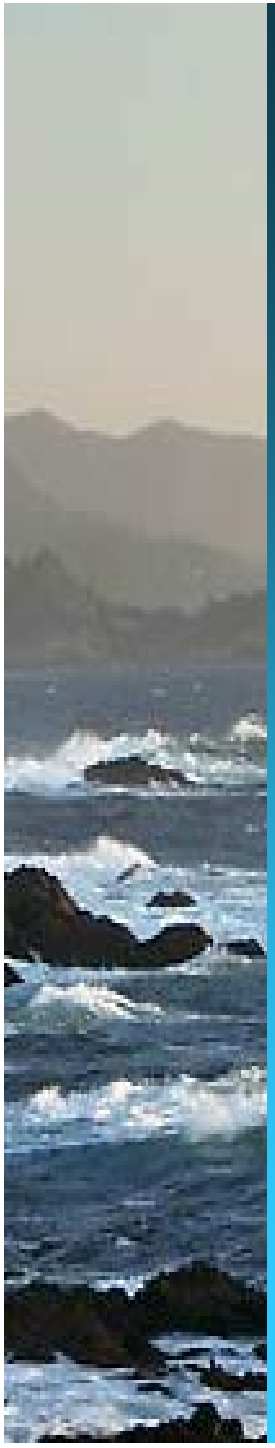
# Purpose of the CEQA Scoping Meeting

- To provide an update on the proposed OCs TMDLs;
- To obtain comments on:
  - A range of alternatives
  - Significant or potentially significant environmental impacts of the project
  - Measures to mitigate any significant environmental impacts of this project
  - BMPs presently being implemented and their costs



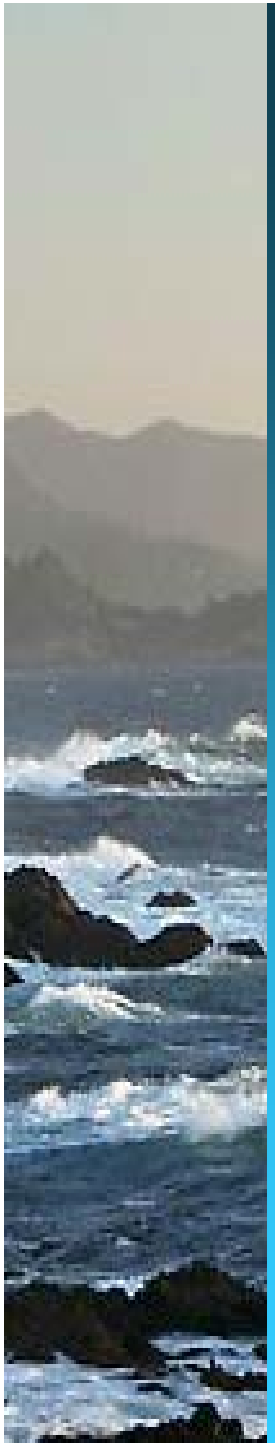
# Meeting Agenda

- Regulatory requirements & process
- TMDL summary
- Scoping of alternatives, significant impacts and mitigation
- Next steps



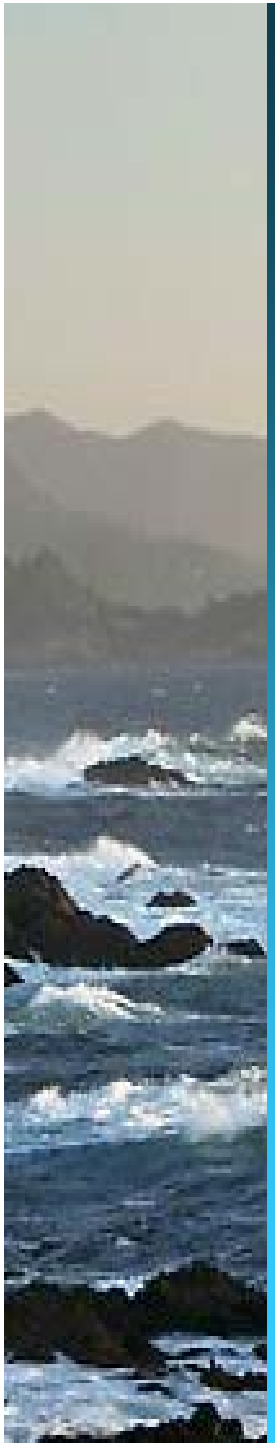
# Regulatory Requirements

- Federal Clean Water Act
- Porter Cologne Water Quality Control Act
- California Environmental Quality Act (CEQA)



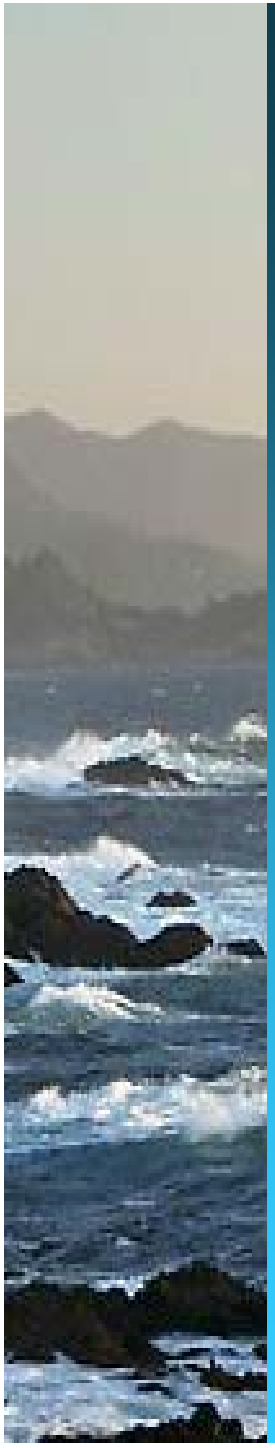
# Federal Clean Water Act

- Section 303(d):
  - Identify waters not meeting standards
  - For impaired waters, establish Total Maximum Daily Loads (TMDL) designed to attain standards



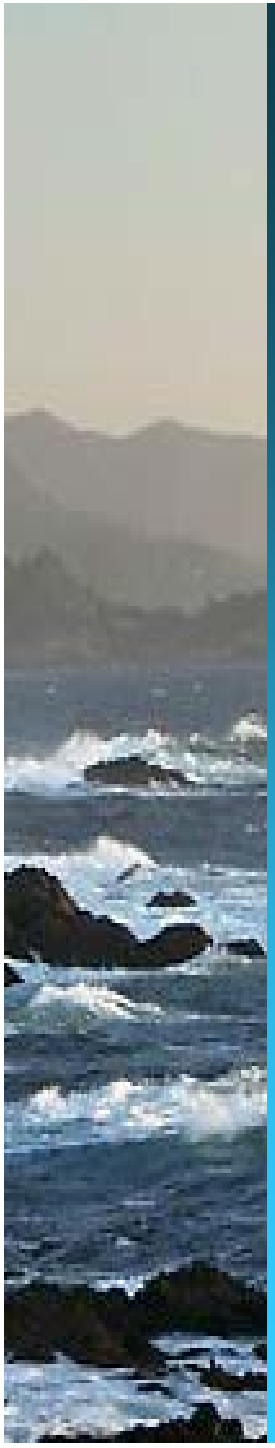
# Porter-Cologne Water Quality Control Act

- Regional Water Quality Control Boards are responsible for protecting surface and ground water quality
- Requires Regional Boards to establish Basin Plans:
  - Santa Ana River Basin Water Quality Control Plan (the “Basin Plan”) (1995)



# Basin Plan

- Water Quality Standards
  - Beneficial uses
  - Numeric and narrative water quality objectives
  - Antidegradation policy
- Implementation plan
- Monitoring program



# Water Quality Objectives for Toxic Substances

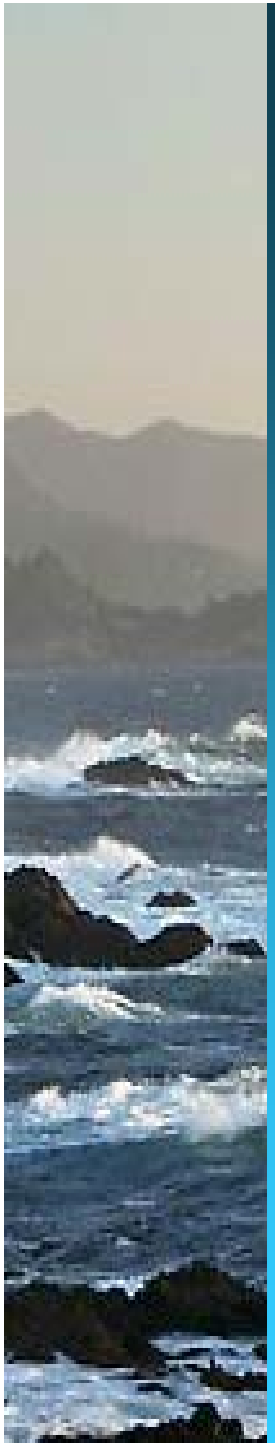
(1) Numeric objectives - CTR

(2) Narrative objectives –

a) Toxic substances shall not be discharged at levels that will bioaccumulate in aquatic resources to levels which are harmful to human health; and

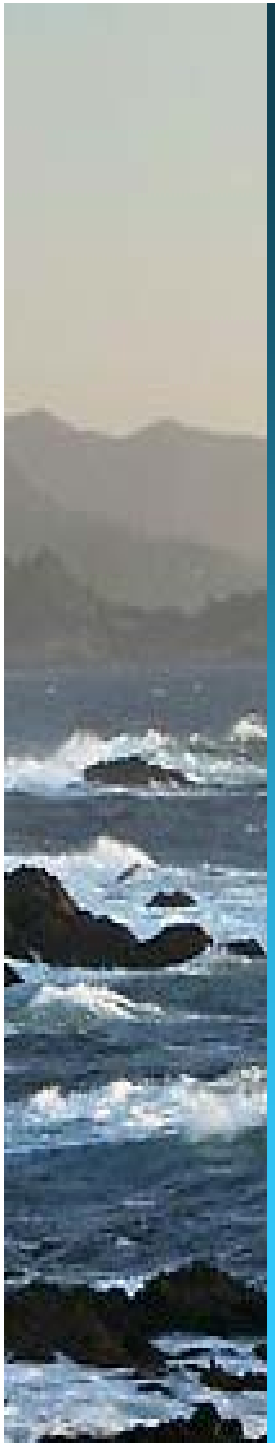
b) The concentration of toxic substances in the water column, sediment, or biota shall not adversely affect beneficial uses.

| | Beneficial Use | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Water Body** | MUN | AGR | IND | PROC | GWR | NAV | POW | REC1 | REC2 | COMM | WARM | LWRM | COLD | BIOL | WILD | RARE | SPWN | MAR | SHEL | EST |
| **Lower Bay** | + | | | | | X | | X | X | X | | | | | X | X | X | X | X | |
| **Upper Bay** | + | | | | | | | X | X | X | | | | X | X | X | X | X | X | X |
| **San Diego Creek Reach 1** | + | | | | | | | X | X | | X | | | | X | | | | | |
| **San Diego Creek Reach 2** | + | | | | I | | | I | I | | I | | | | I | | | | | |
| **Other tributaries** | + | | | | I | | | I | I | | I | | | | I | | | | | |



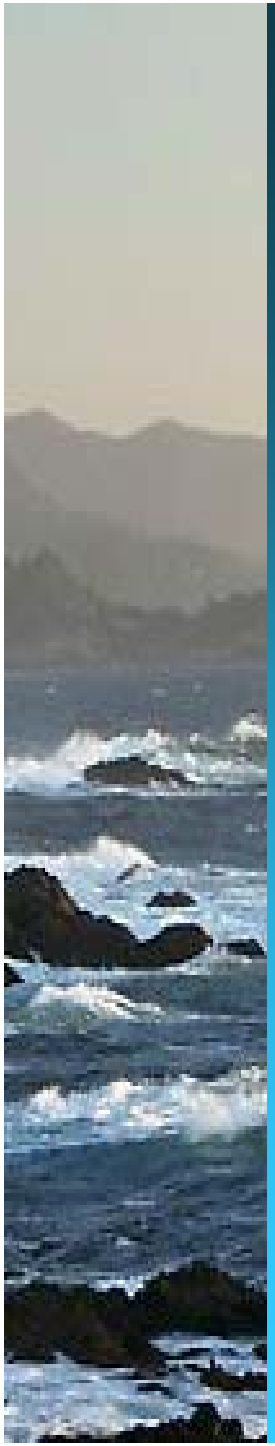
# Basin Plan Amendment

- TMDLs incorporated into the Basin Plan through Basin Plan Amendment
  - Requires compliance with CEQA
    - State Board's water quality planning process has been certified as "functionally equivalent" to the requirements of CEQA
    - Exempt from requirement to prepare an Environmental Impact Report or Negative Declaration and Initial Study (CCR Title 14, §15251(g))



# CEQA (cont'd)

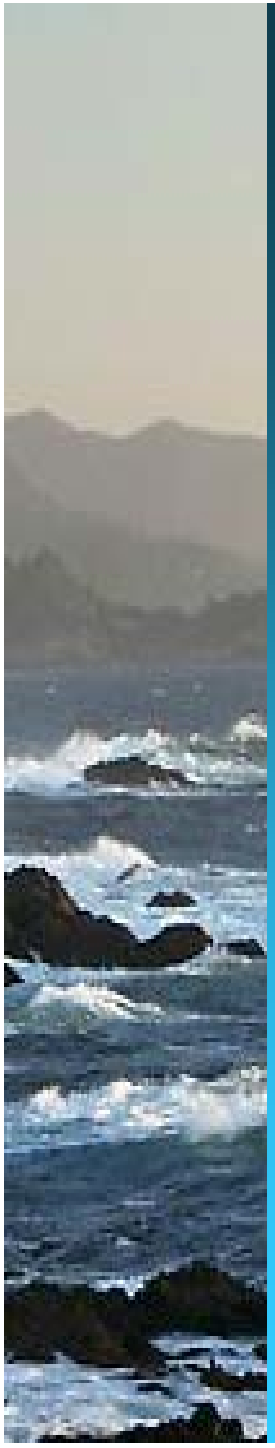
- Substitute environmental documents required for basin planning actions are:
  - A written technical report
  - A draft of the Basin Plan Amendment
  - A completed Environmental Checklist



# CEQA Checklist

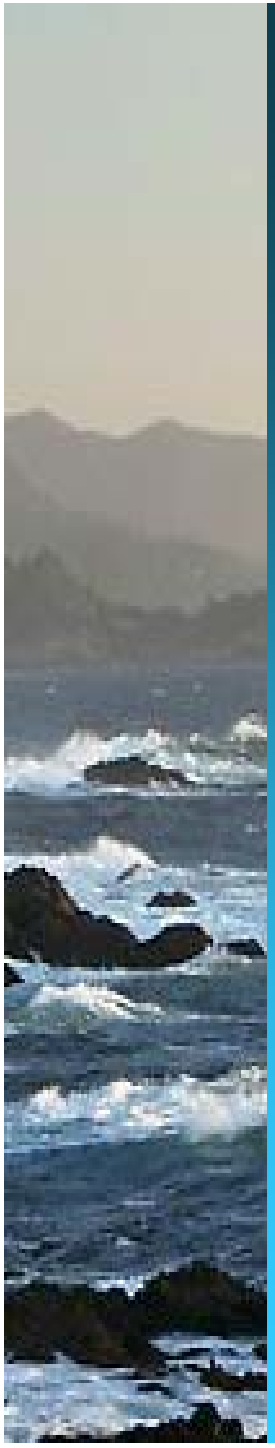
Evaluate possible environmental impacts on the following categories:

- Aesthetics
- Agriculture
- Air quality
- Biological resources
- Cultural resources
- Geology & soils
- Hazardous materials
- Hydrology & water quality
- Land use & planning
- Mineral resources
- Noise
- Population & housing
- Public services
- Recreation
- Transportation
- Utilities & Sewer services



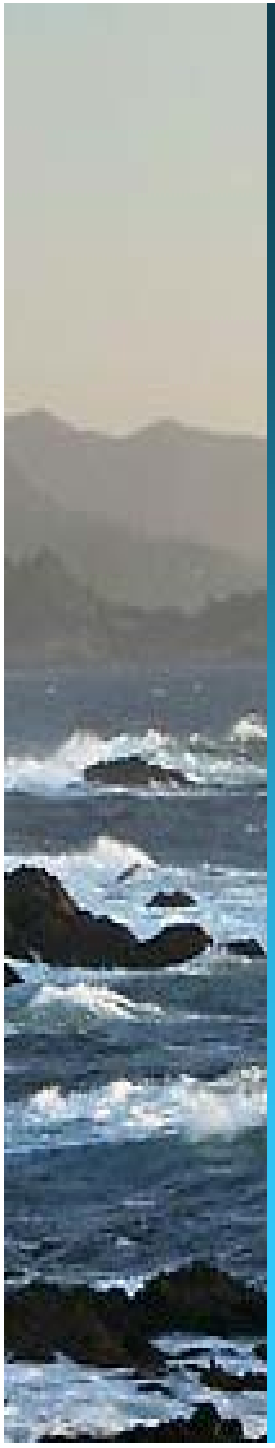
# CEQA (cont'd)

- Economic Considerations
  - Must consider reasonably foreseeable methods of compliance
  - Must provide an estimate for the cost of those compliance measures
  - Must identify potential sources of funding
- External Scientific Peer Review



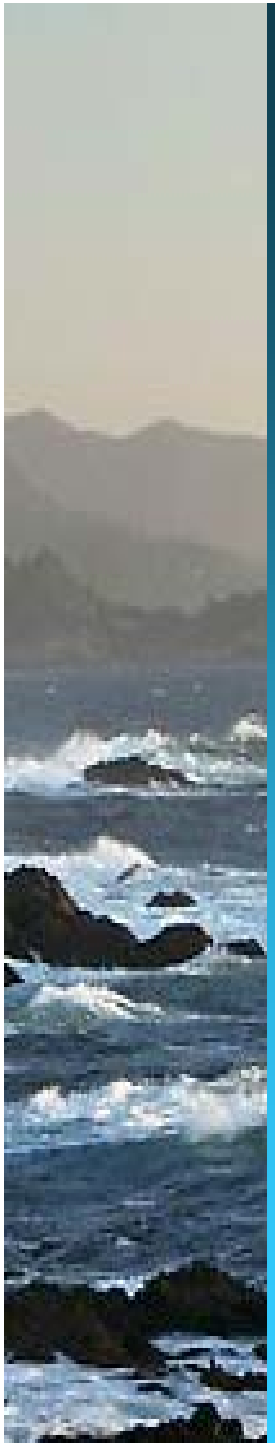
# Basin Plan Amendment Approval Process

- Regional Water Quality Control Board
- State Water Resources Control Board
- Office of Administrative Law
- U.S. Environmental Protection Agency



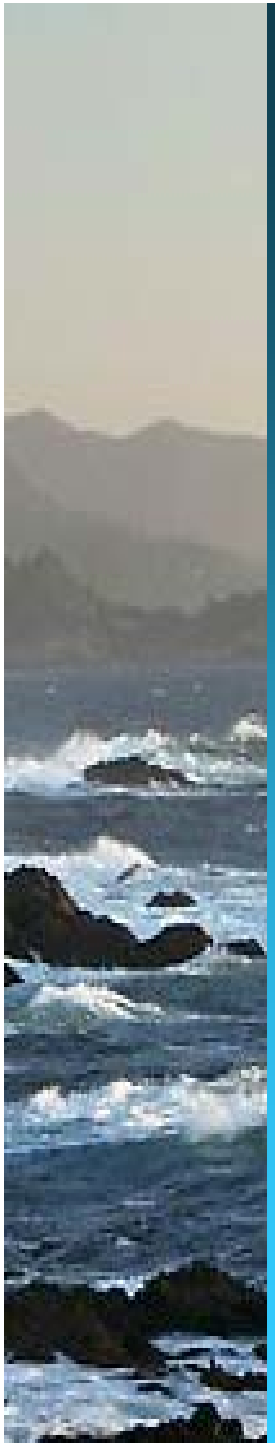
# TMDL History

- 303(d) listings in early 1990s
- Consent decree – 1997
- SARWQCB Final Problem Statement – 2000
- Technical TMDLs promulgated by USEPA - 2002



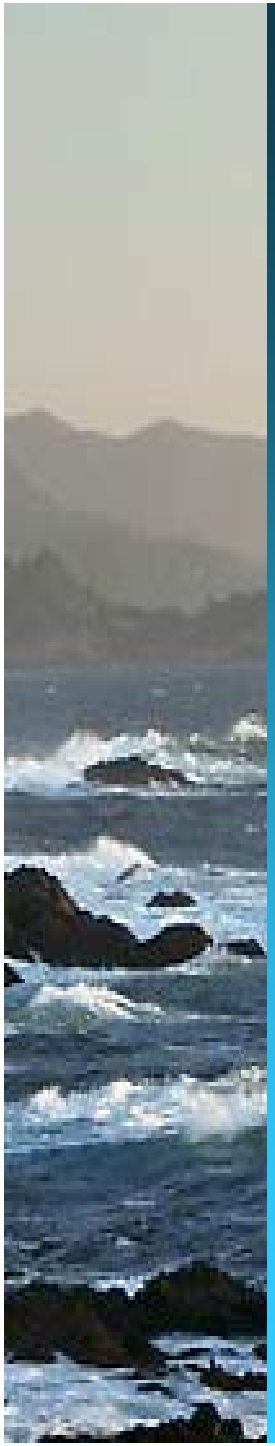
# Where are we in the process?

| Milestone | Schedule |
|---|---|
| CEQA Scoping Meetings | June 22, 2005<br>August 9, 2006 |
| TMDL Technical Report | August 2006 |
| External Peer Review | August-October 2006 |
| Completion of Draft BPA Staff Report | September 2006 |
| Board Workshop | October 13, 2006 |
| Public comment period | October-November, 2006 |
| Board Adoption Hearing | January 2007 |

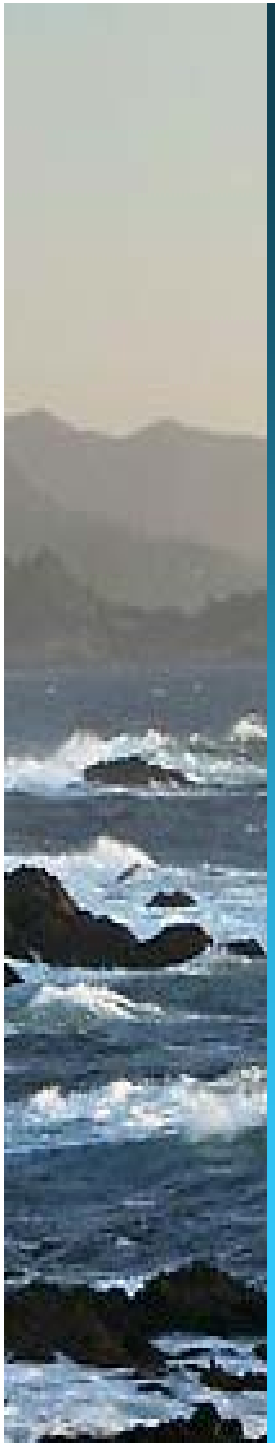


# What We've Been Doing

- Impairment reevaluated following adoption of State Listing Policy in 2004
- Waterbody-pollutant combinations requiring TMDLs changed
- Other modifications to USEPA technical TMDLs
  - Loading capacities tied to sediment TMDL allowable loads



- Technical Advisory Committee formed and have provided input
  - Representatives from OEHHA, USFWS, SFEI, SCCWRP, academia, private consulting
- We have met several times with stakeholders on issues of concern

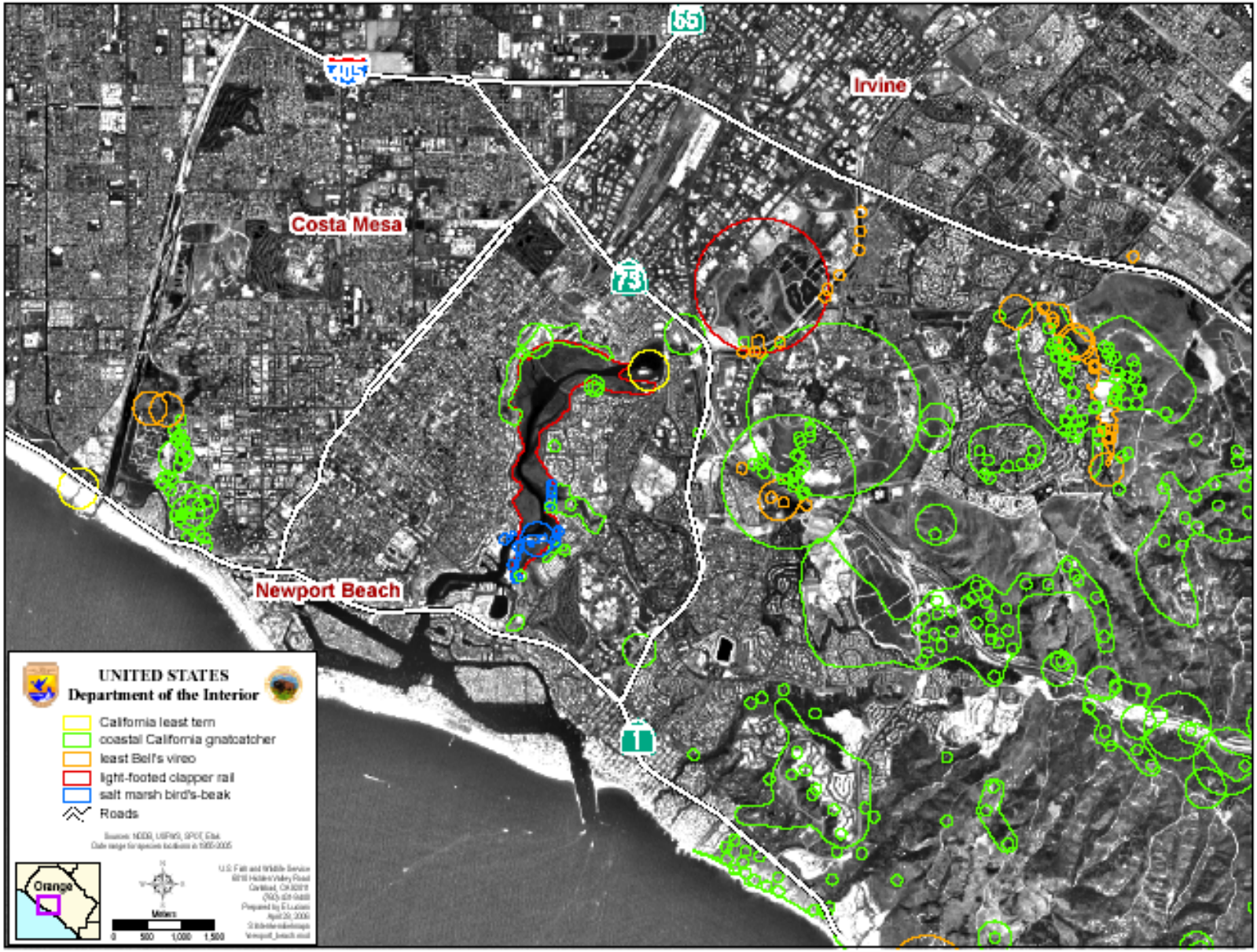


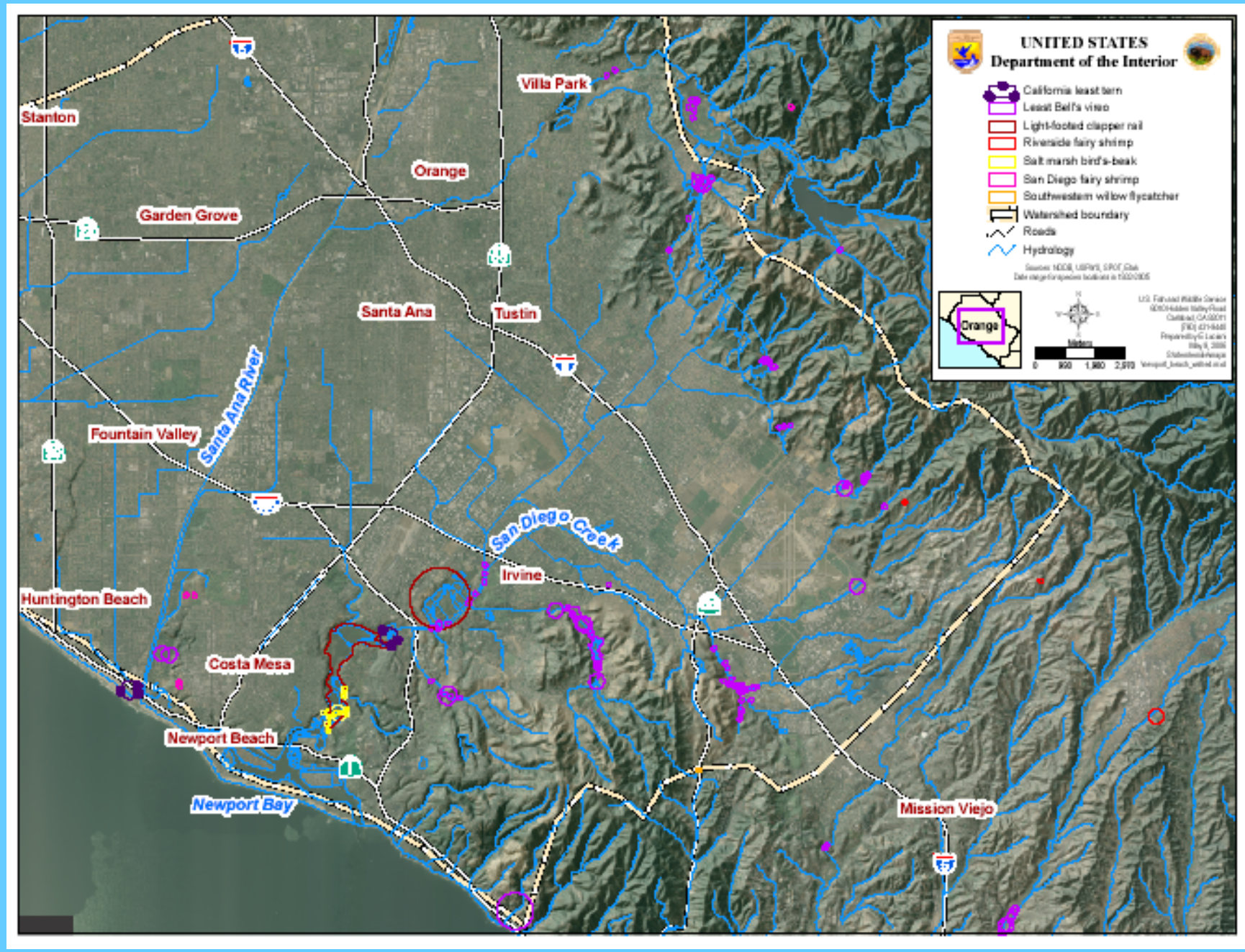
# Why the Concern about OCs?

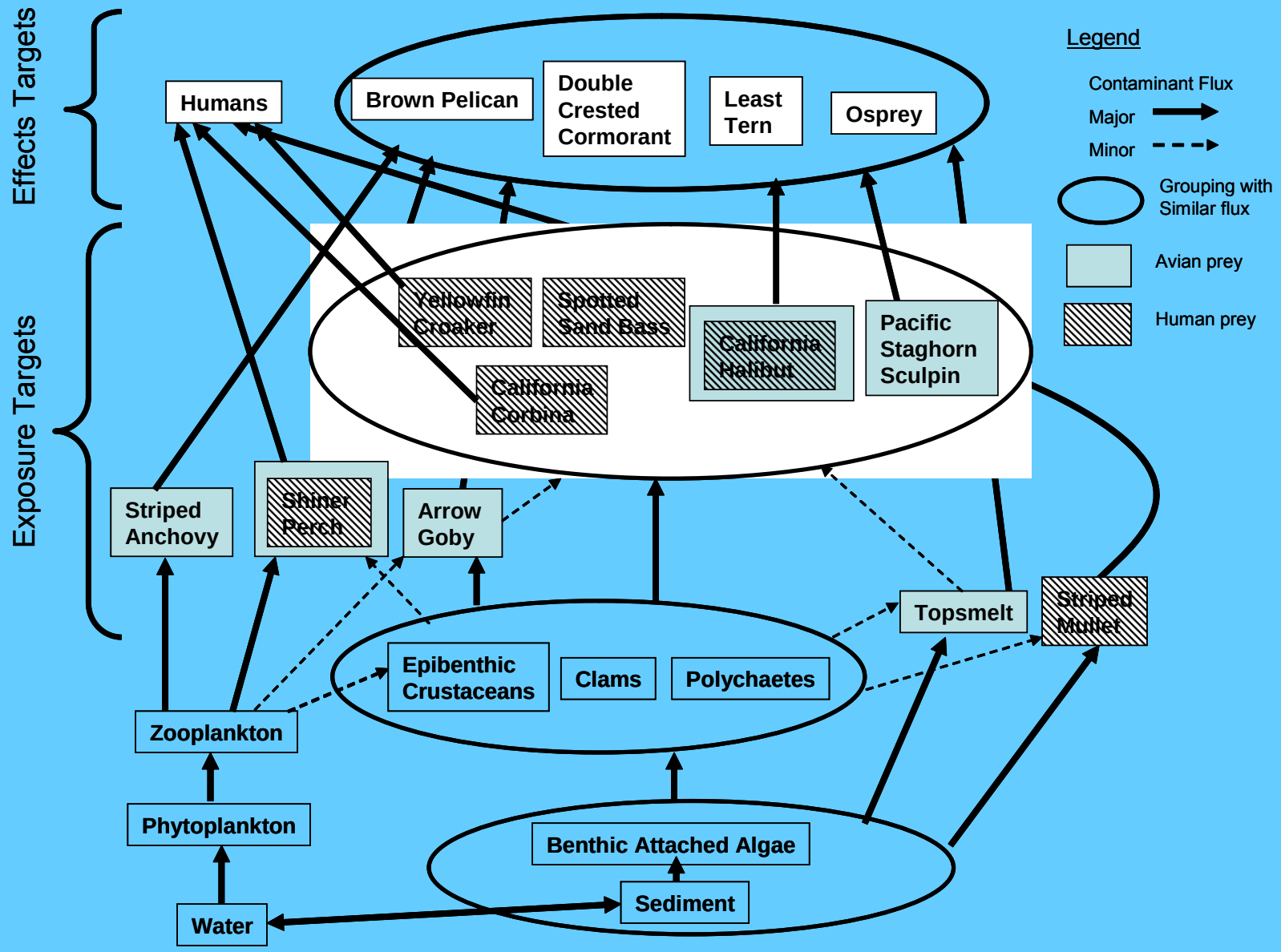
- Adverse toxic effects to humans, aquatic life and wildlife due to direct exposure
- Adverse toxic effects to humans, aquatic life and wildlife due to indirect effects related to bioaccumulation and biomagnification

# Biomagnification

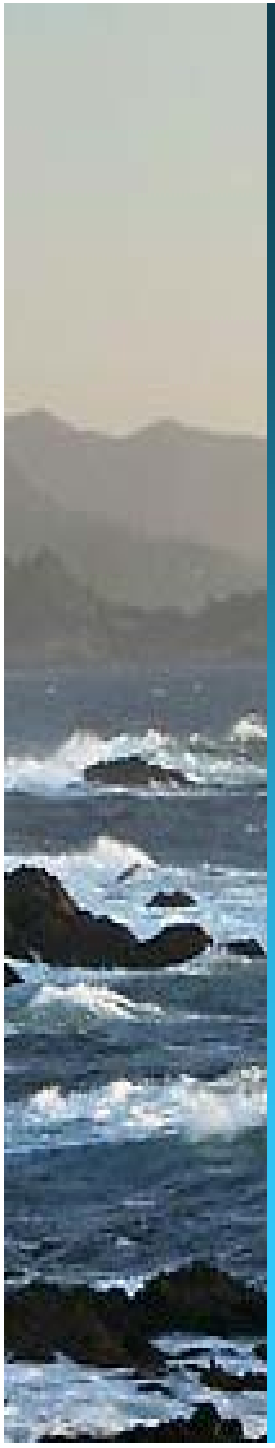
All OCs pollutants bioaccumulate in plants and fatty tissues of fish, birds, and mammals. DDT linked to reproductive failure in bald eagle; also adverse effects to peregrine falcon, brown pelican and osprey


55
405
Irvine
Costa Mesa
73
Newport Beach
1
UNITED STATES
Department of the Interior
California least tern
coastal California gnatcatcher
least Bell's vireo
light-footed clapper rail
salt marsh bird's-beak
Roads
Orange
Meters
0
500
1,000
1,500


UNITED STATES
Department of the Interior
California least tern
Least Bell's vireo
Light-footed clapper rail
Riverside fairy shrimp
Salt marsh bird's-beak
San Diego fairy shrimp
Southwestern willow flycatcher
Watershed boundary
Roads
Hydrology
Orange
Villa Park
Stanton
Orange
Garden Grove
Santa Ana
Tustin
Santa Ana River
Fountain Valley
San Diego Creek
Irvine
Huntington Beach
Costa Mesa
Newport Beach
Newport Bay
Mission Viejo




# Conceptual Food Web Model – SFEI Case Study



# Impairment Assessment

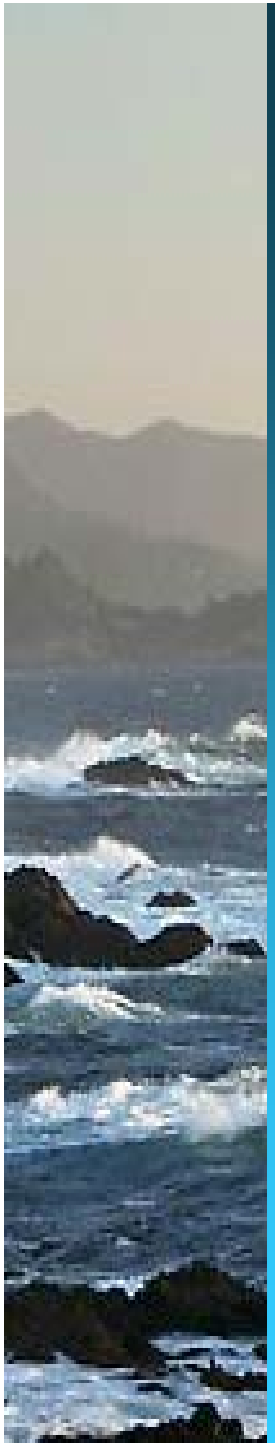
- Weight of evidence approach
  - Water chemistry
  - Fish tissue chemistry
  - Sediment quality (triad approach)
    - Sediment chemistry
    - Sediment and porewater toxicity
    - Benthic community response
  - Effects due to food web biomagnification

# Minimum number of exceedances for impairment finding

Null Hypothesis ($H_o$): Actual exceedance proportion ≤3 percent.
Alternate Hypothesis ($H_a$): Actual exceedance proportion > 18 percent. The minimum effect size is 15 percent.

| Sample Size | List if the number of exceedances equals or is greater than |
|---|---|
| 2-24 | 2* |
| 25-36 | 3 |
| 37-47 | 4 |
| 48-59 | 5 |
| 60-71 | 6 |
| 72-82 | 7 |
| 83-94 | 8 |
| 95-106 | 9 |
| 107-117 | 10 |
| 118-129 | 11 |

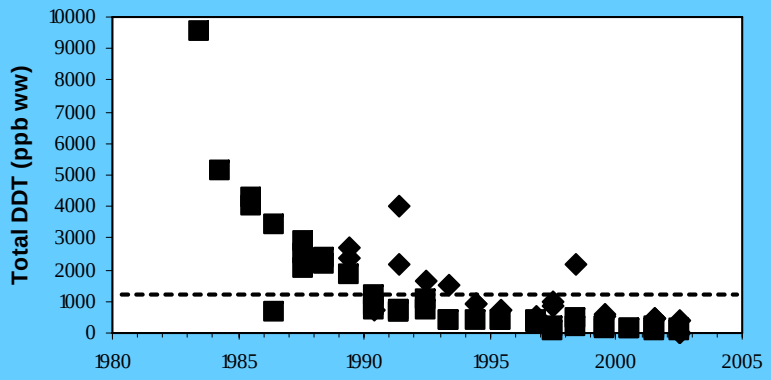
*Application of the binomial test requires a minimum sample size of 16. The number of exceedances required using the binomial test at a sample size of 16 is extended to smaller sample sizes. For sample sizes greater than 129, the minimum number of measured exceedances is established where $\alpha$ and $\beta \leq 0.2$ and where $|\alpha - \beta|$ is minimized.
$\alpha$= Excel® Function BINOMDIST (n-k, n, 1-0.03, TRUE)
$\beta$=Excel® Function BINOMDIST (k-1, n, 0.18, TRUE)
where n = number of samples,
k = minimum number of measured exceedances to place a water on the section 303(d) list,
0.03 = acceptable exceedance proportion; and
0.18 = unacceptable exceedance proportion

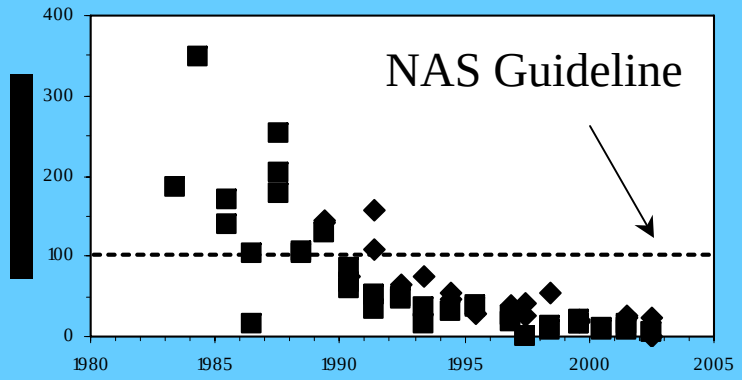


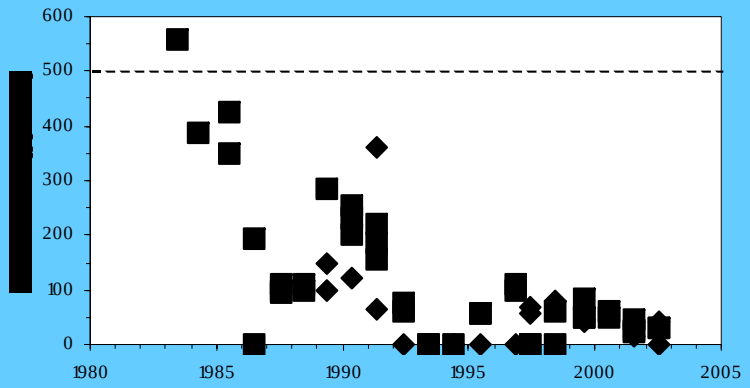
# Data Sources

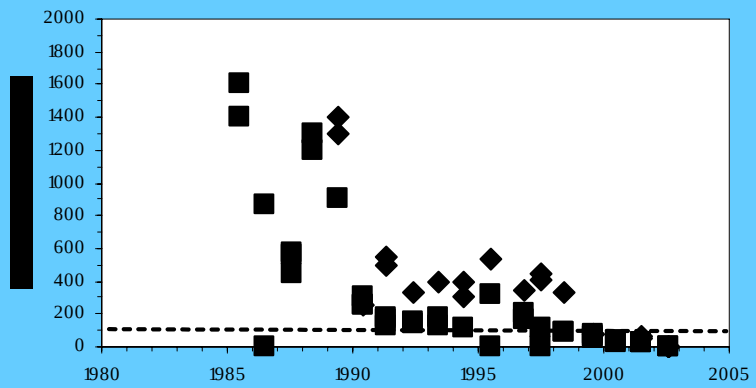
- State Mussel Watch Program (SMW)
- Toxic Substances Monitoring Program (TSMP)
- Bay Protection & Toxic Cleanup Program (BPTCP)
- Coastal Fish Contamination Program (OEHHA)
- Orange County RDMD
- Irvine Ranch Water District (IRWD)
- SCCWRP Sediment Toxicity Study (2004)
- SCCWRP Fish Bioaccumulation Study (2004)
- SCCWRP Clapper Rail Egg Study (2005)
- BIGHT ’98 and ‘03
- Resource Management Associates (RMA) modeling reports

# OCs in Red Shiner Whole Fish Tissue – San Diego Creek

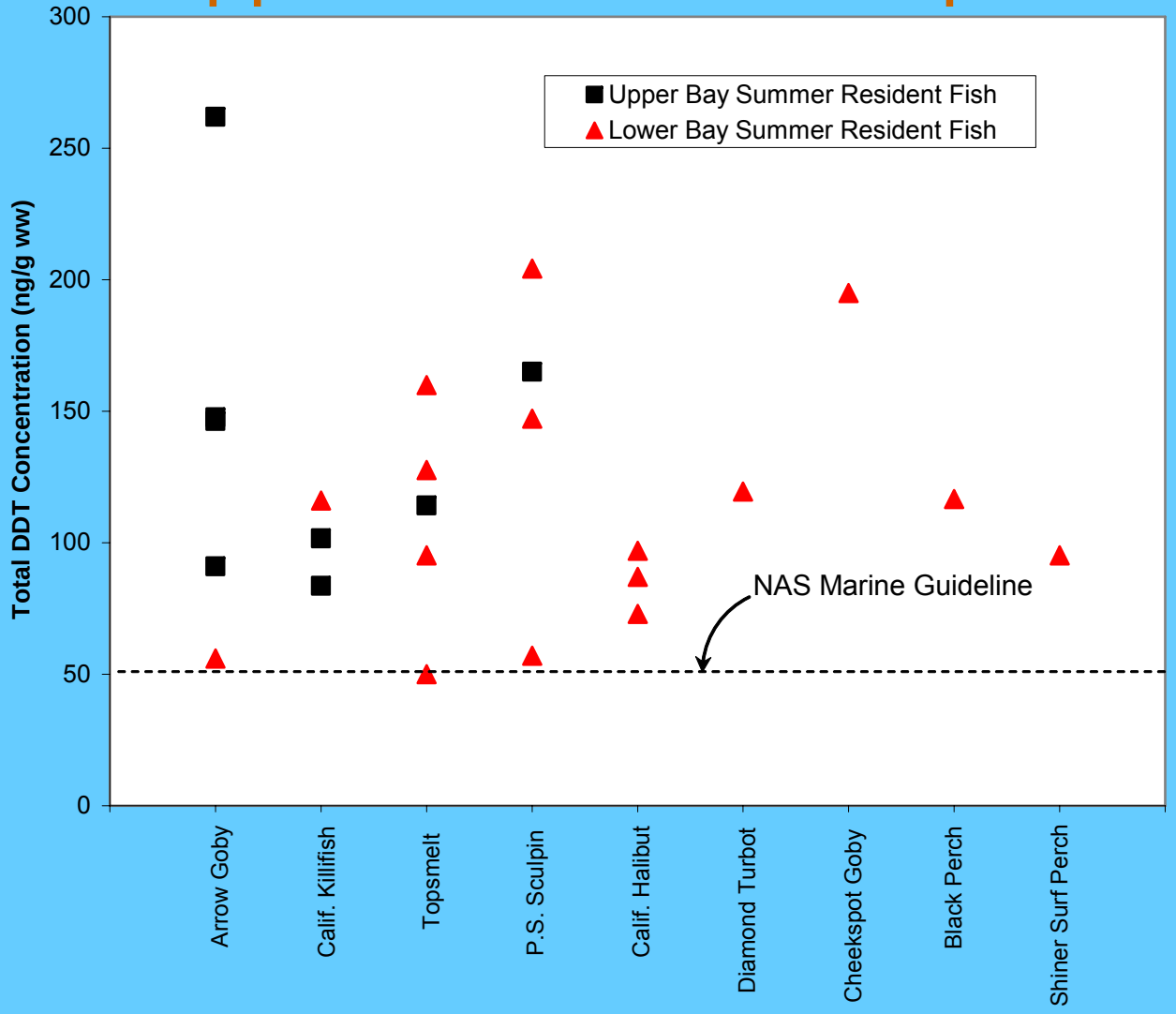


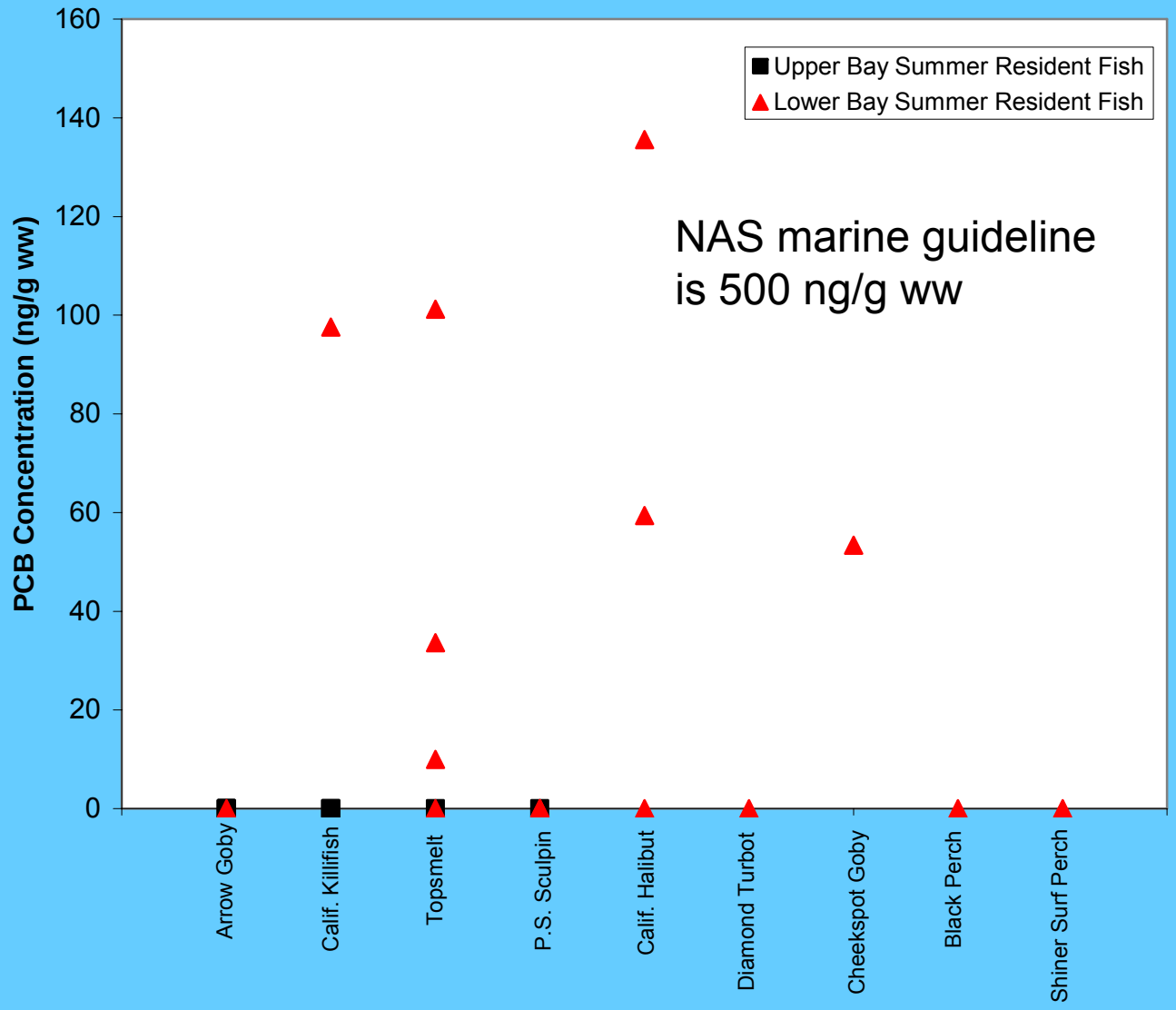



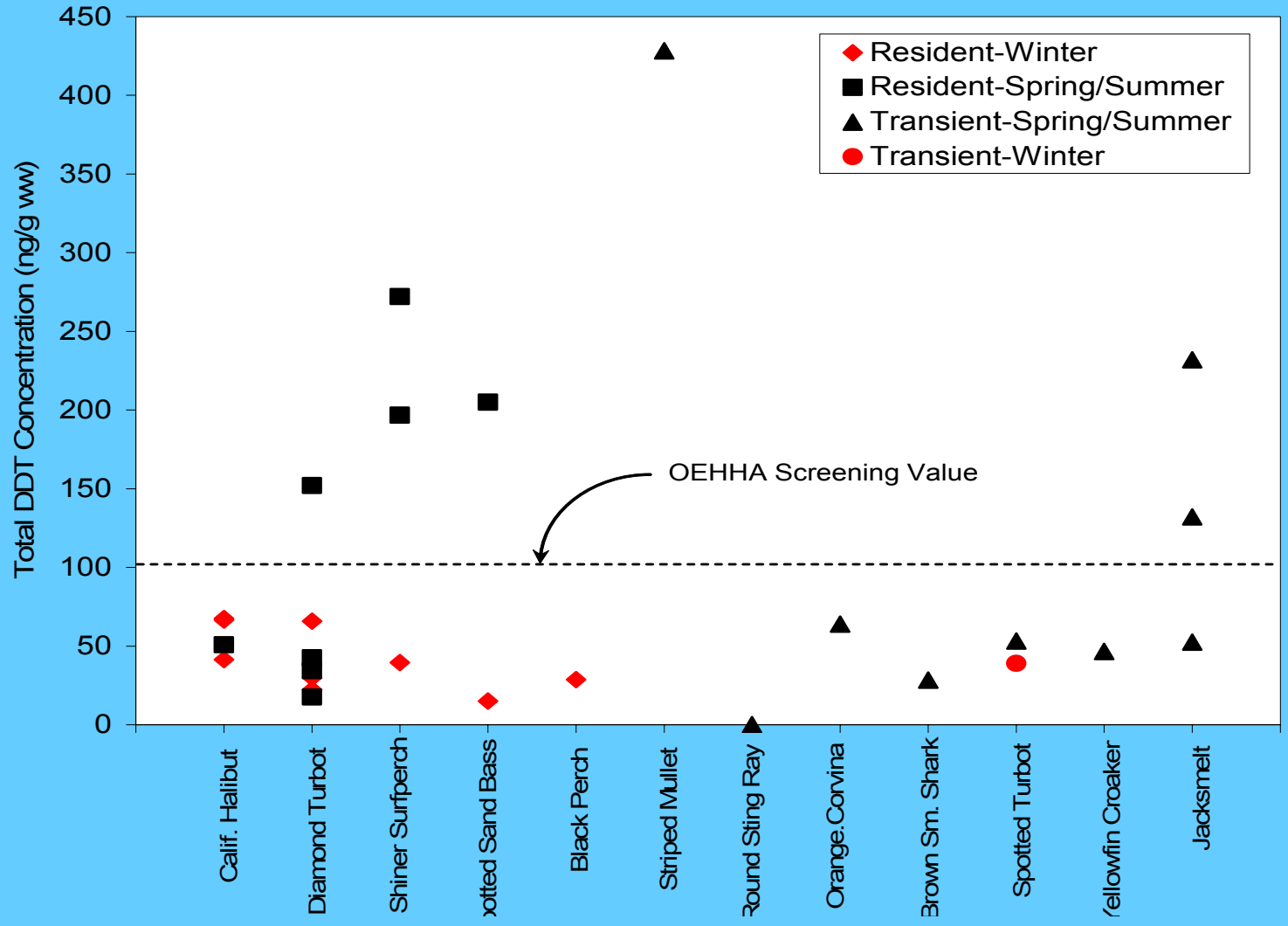
# DDT in Whole Fish Tissue
# Upper and Lower Newport Bay



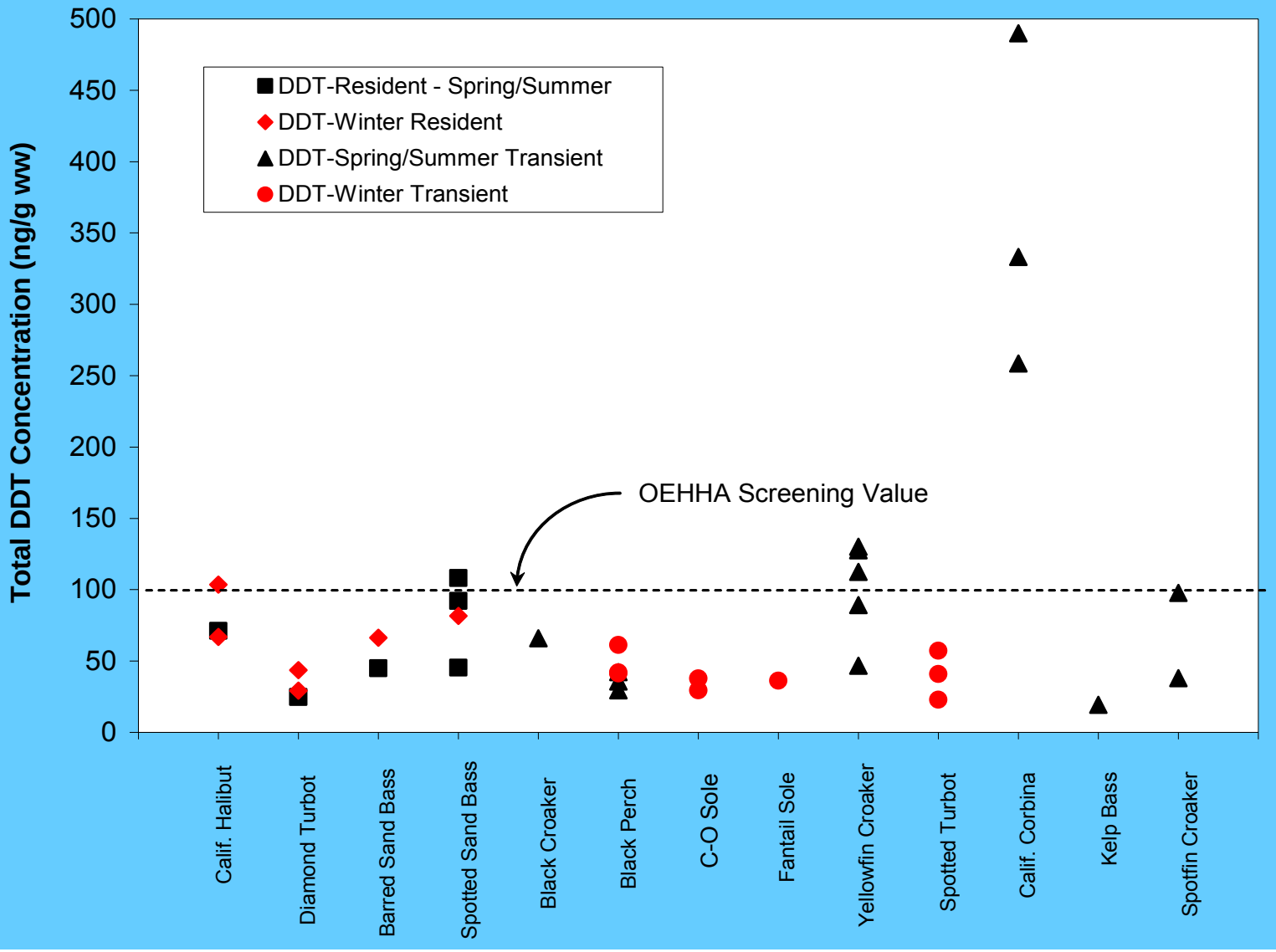
# PCBs in Whole Fish Tissue
# Upper and Lower Newport Bay



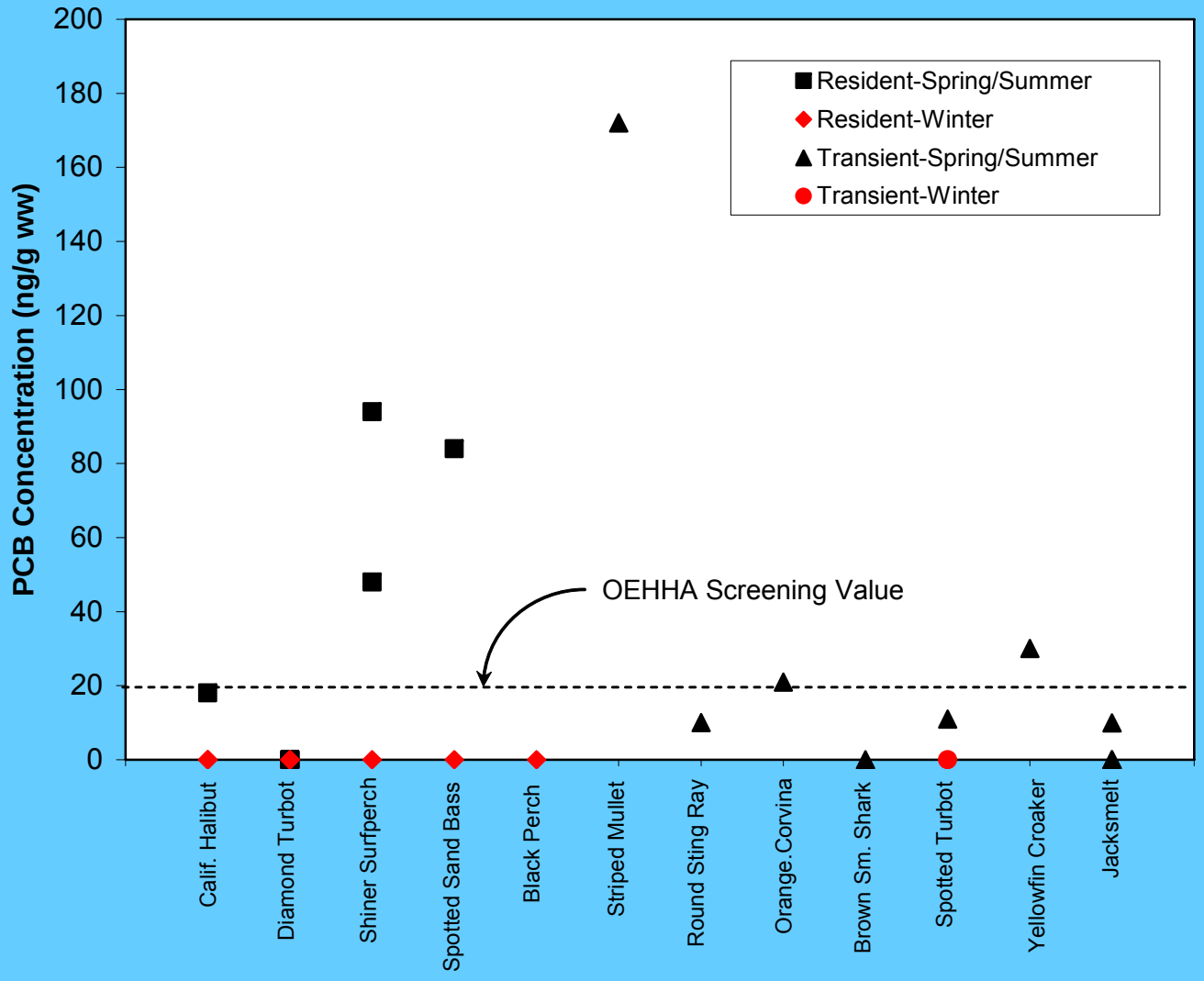
# DDT in Sport Fish Fillets in Upper Newport Bay



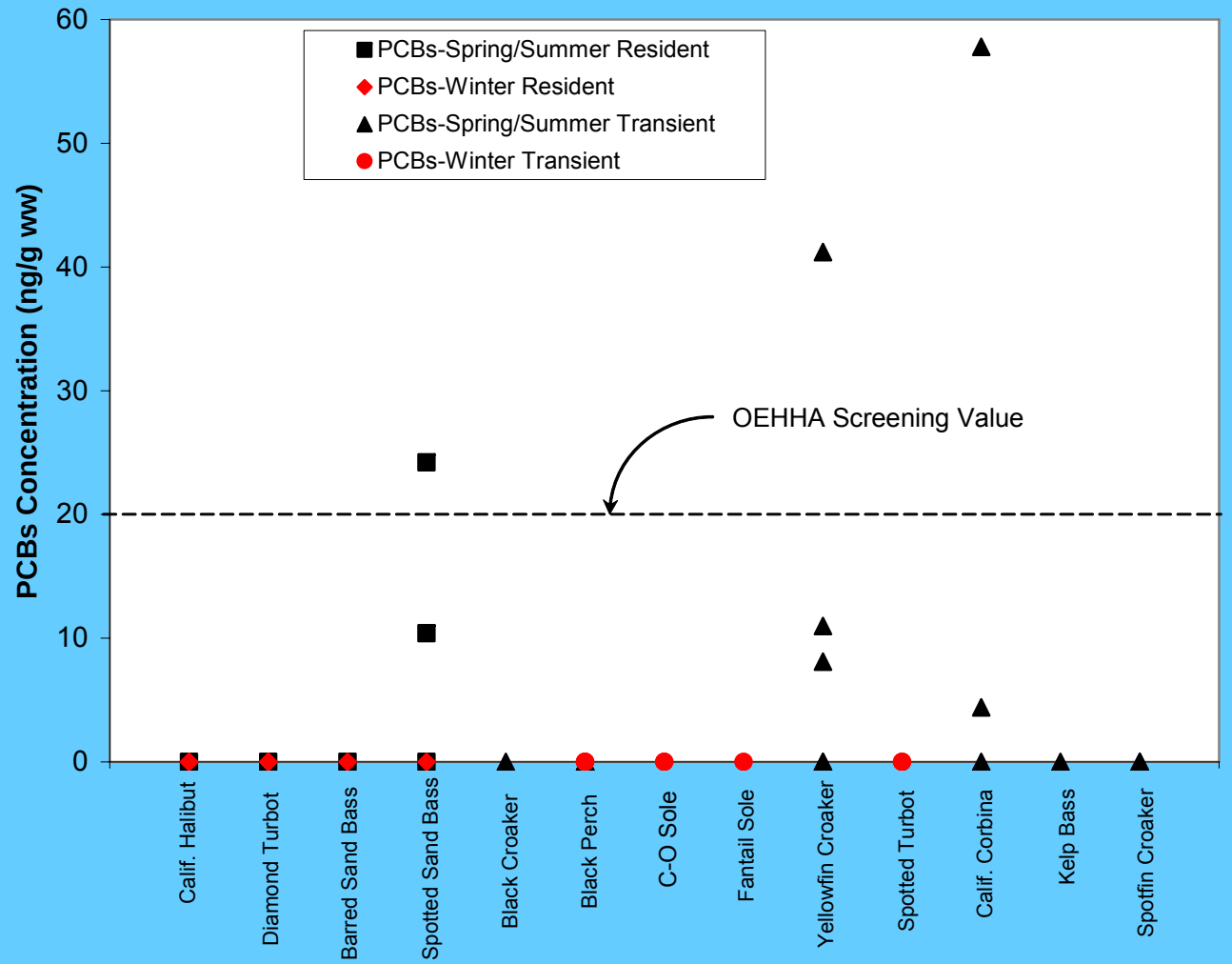
# DDT in Sport Fish Fillets in Lower Newport Bay



# PCBs in Sport Fish Fillets in Upper Newport Bay



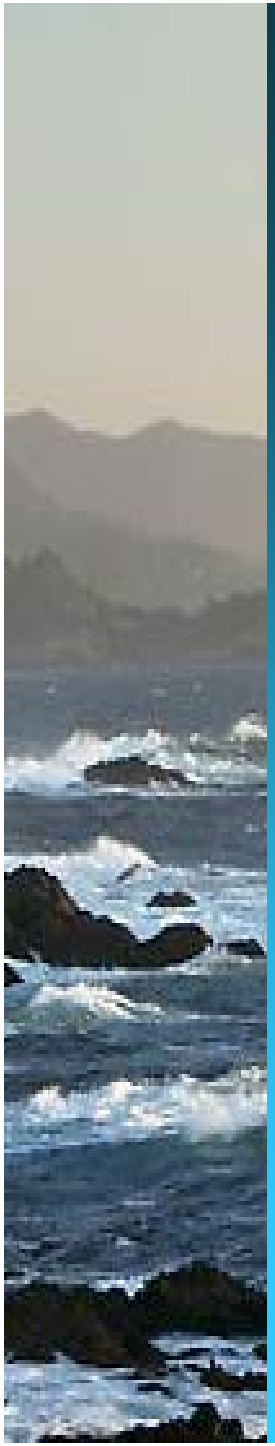
# PCBs in Sport Fish Fillets in Lower Newport Bay



# TMDL Constituent Comparison

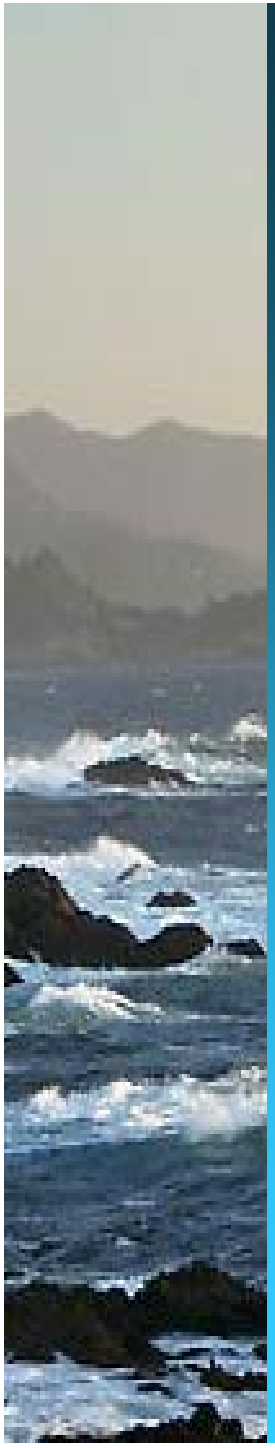
| | USEPA* | SARWQCB** Staff |
|---|---|---|
| San Diego Creek | Chlordane, Dieldrin, DDT, PCBs, Toxaphene | Chlordane‡, DDT‡, PCBs‡, Toxaphene |
| Upper Newport Bay | Chlordane, DDT, PCBs | Chlordane, DDT, PCBs |
| Lower Newport Bay | Chlordane, Dieldrin, DDT, PCBs | Chlordane, DDT, PCBs |

* Technical TMDLs include 12 waterbody-pollutant combinations.
** Technical TMDLs include 10 waterbody-pollutant combinations.
‡ TMDLs are being developed because SD Creek is primary source to Newport Bay for OCs



# What is a TMDL?

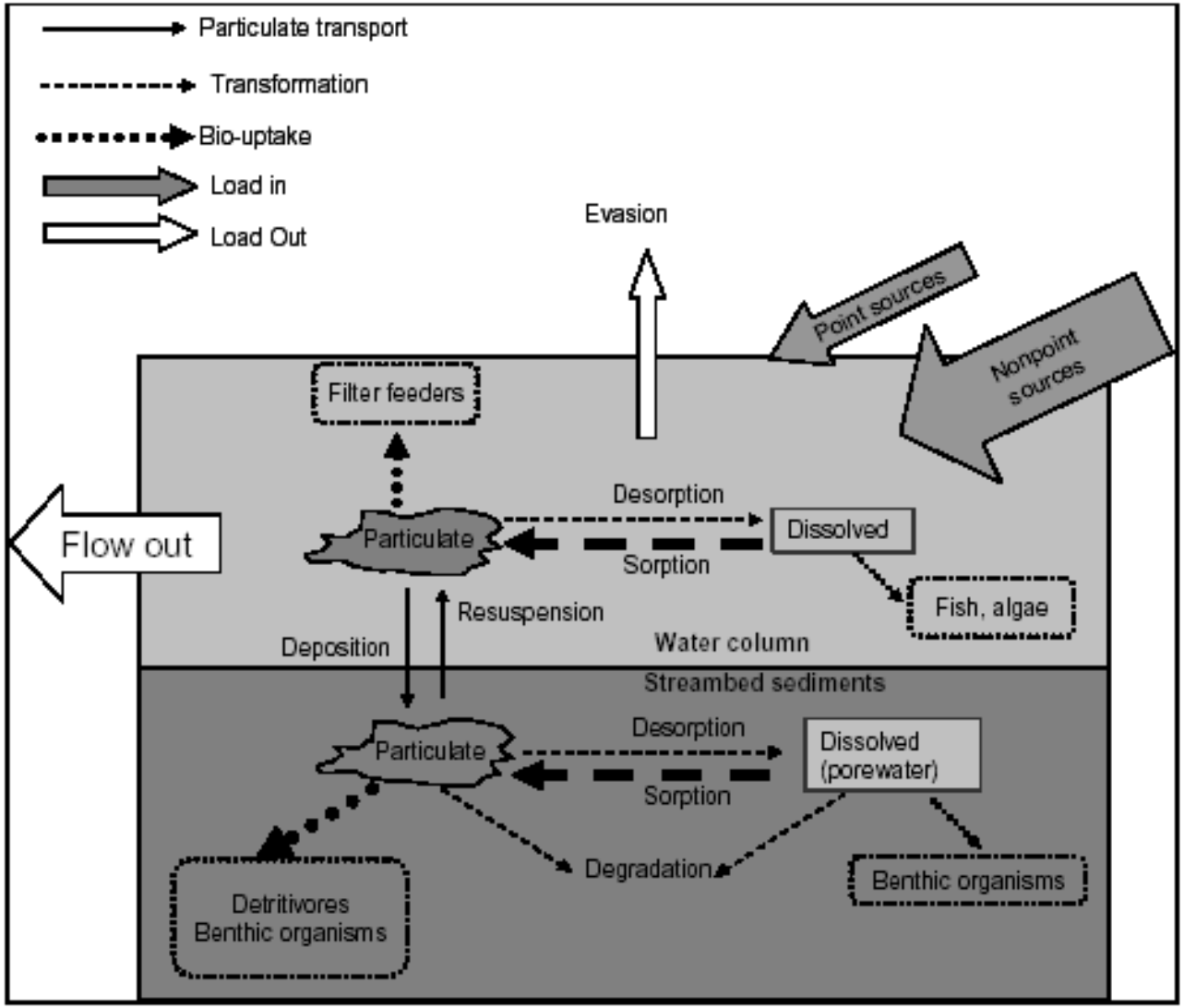
- **Total Maximum Daily Load**: The maximum amount of a pollutant that can a waterbody can receive and still attain water quality standards (i.e., meet applicable water quality objectives and support all beneficial uses)
- It is an interpretation of narrative water quality objectives
- TMDL = WLA + LA + MOS

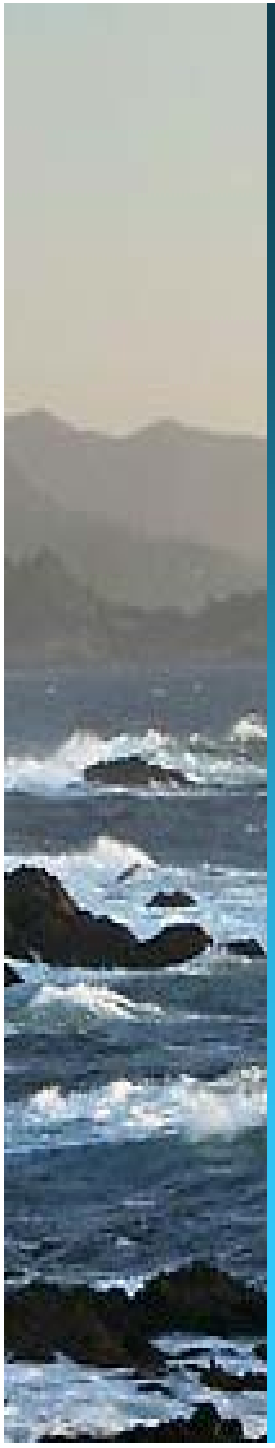


# TMDL Elements

- Problem Statement
- Numeric Targets
- Source Analysis
- Loading Capacity/Linkage Analysis
- TMDL and Allocations
- Seasonal Variation/Critical Conditions
- Margin of Safety
- Implementation Plan

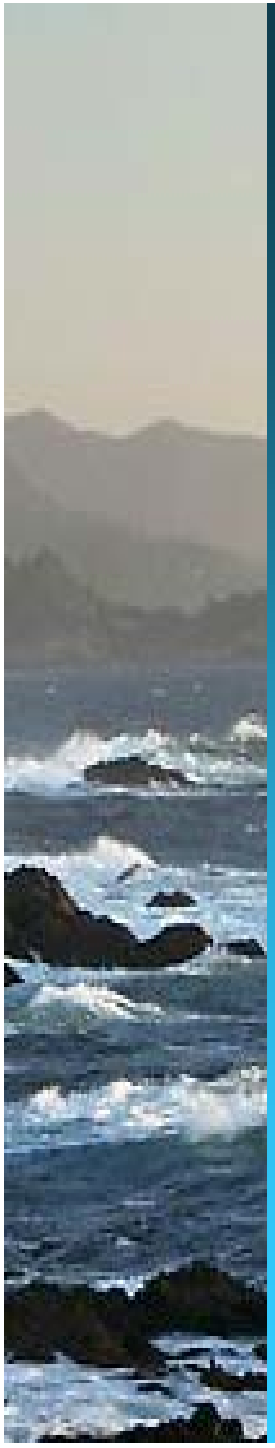
# System Complexity





# Numeric Targets

- TMDL must identify endpoints in sediment, water column or tissue that equate to attainment of water quality standards
- Set to be protective of most sensitive beneficial use
- Newport Bay supports 7 federally listed bird species; two endangered plant species; 78 species of fish, some of which are caught and consumed by people



# Numeric Targets (cont'd)

- Sediment targets are primary targets in the TMDLs because:
  - OC pollutants directly associated with fine sediment
  - OC pollutants primarily transported via adherence to particulates
  - Limited water column data are available
  - Attainment of sediment targets will result in attainment of water column criteria (CTR) and tissue screening values (OEHHA)

# TMDL Targets

| Sediment Targets[1]; units are μg/kg dry weight (TELs) | | | | |
|---|---|---|---|---|
| | Total DDT | Chlordane | Total PCBs | Toxaphene |
| San Diego Creek and tributaries | 6.98 | 4.5 | 4.1 | 0.1 |
| Upper & Lower Newport Bay | 3.89 | 2.26 | 21.5 | |
| | | | | |
| **Fish Tissue Targets for Protection of Human Health[2]; units are μg/kg wet weight (OEHHA SVs)** | | | | |
| San Diego Creek and tributaries | 100 | 30 | 20 | 30 |
| Upper & Lower Newport Bay | 100 | 30 | 20 | |
| | | | | |

# TMDL Targets

| Fish Tissue Targets for Protection of Aquatic Life and Wildlife[3]; units are μg/kg wet weight (NAS Guidelines) | | | | |
|---|---|---|---|---|
| | **DDT** | **Chlordane** | **PCBs** | **Toxaphene** |
| **San Diego Creek and tributaries** | **1000** | **100** | **500** | **100** |
| **Upper & Lower Newport Bay** | **50** | **50** | **500** | |
| **Water Column Targets = CTR Values** | | | | |

# TMDL Loads

## San Diego Creek

| Constituent | Loading Capacity | Existing Load | Reduction Needed |
|---|---|---|---|
| Total DDT | 396 | 5223 | 4827 |
| Chlordane | 255 | 552 | 297 |
| Toxaphene | 6 | 536 | 530 |
| Total PCBs | 1933 | 256 | N/A |

Units are grams per year.

# TMDL Loads

## Upper Newport Bay

| Constituent | Loading Capacity | Existing Load | TMDL | Needed Reduction |
|---|---|---|---|---|
| Total DDT | 160 | 2318 | 160 | 2158 |
| Chlordane | 93 | 455 | 93 | 362 |
| Total PCBs | 884 | 92 | 92 | N/A |

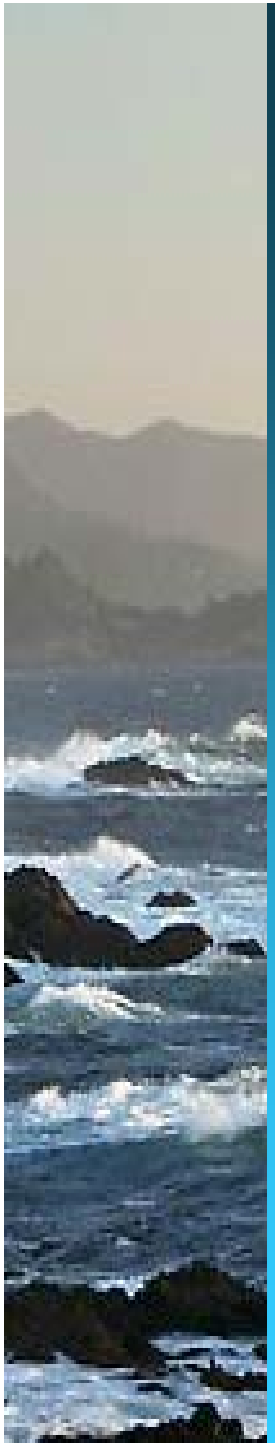
Units are grams per year.

# TMDL Loads

## Lower Newport Bay

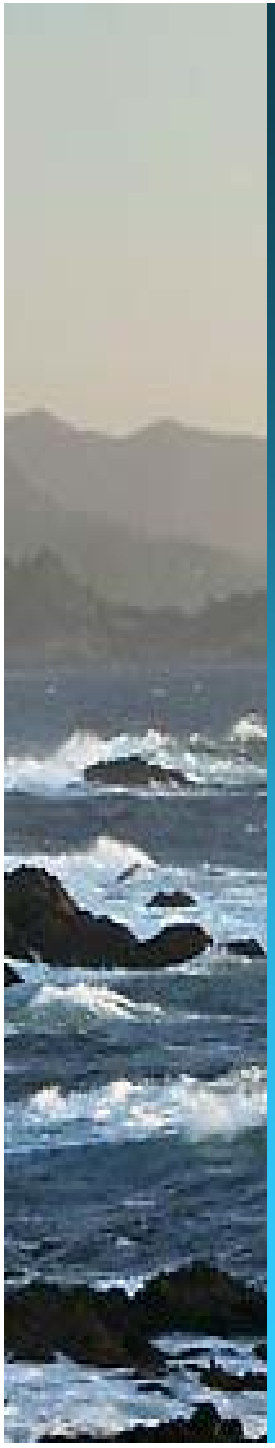
| Constituent | Loading Capacity | Existing Load | TMDL | Needed Reduction |
|---|---|---|---|---|
| Total DDT | 59 | 656 | 59 | 597 |
| Chlordane | 34 | 36 | 34 | 2 |
| Total PCBs | 326 | 241 | 241 | N/A |

Units are grams per year.



# TMDL Allocations

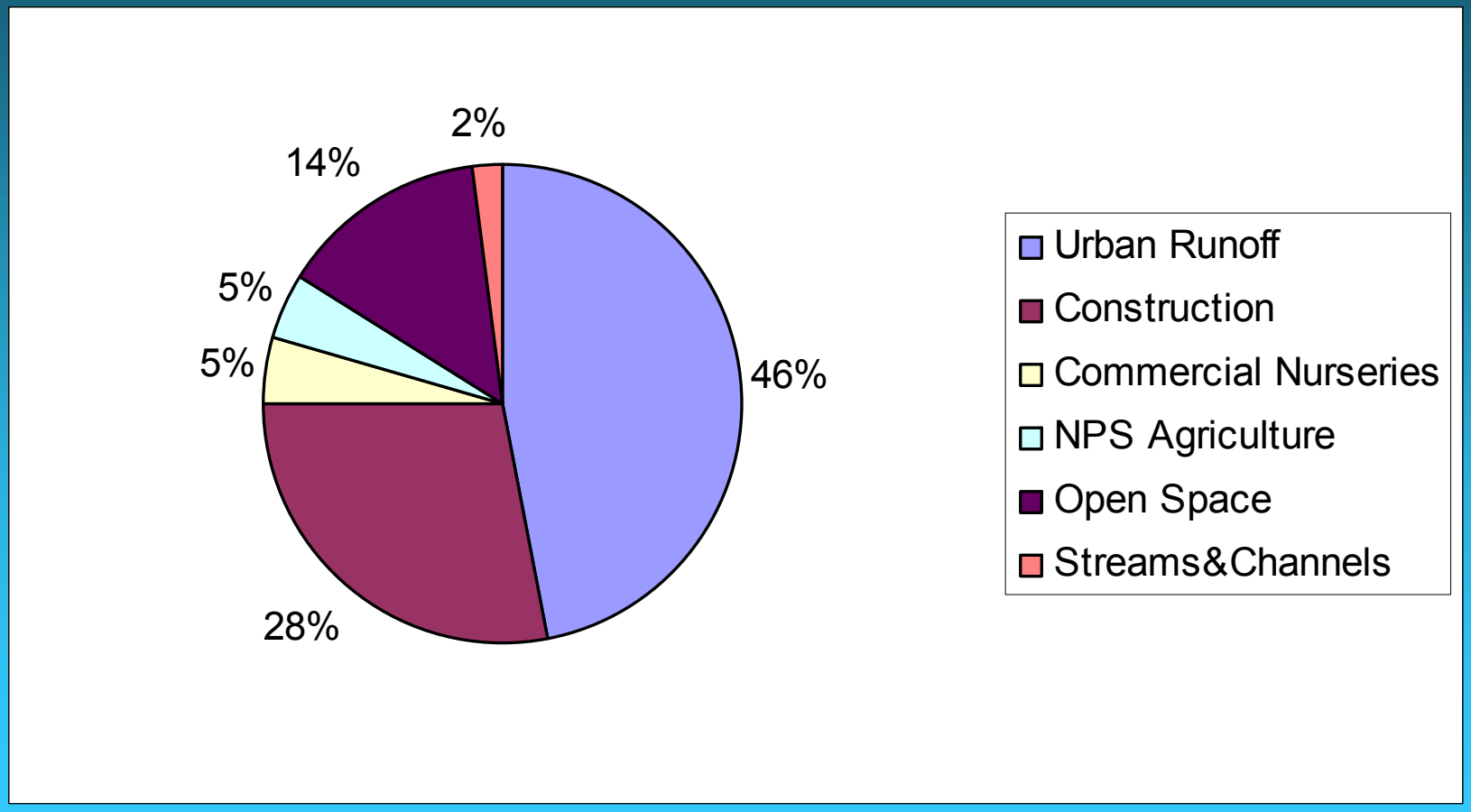
- Based on 2002 Land Use Areas and normalized to relative source ranking
  - (1) Agriculture
  - (2) Construction
  - (3) Channels and Streams
  - (4) Open Space
  - (5) Urban

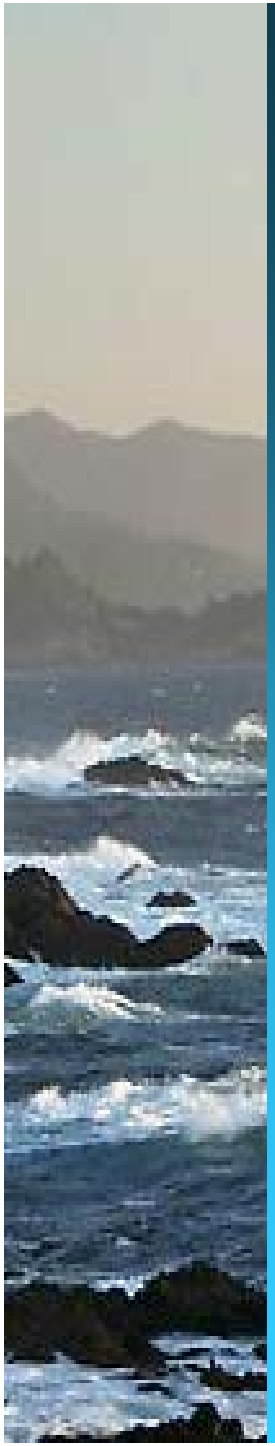


# TMDLs and Allocations

- TMDL = WLA + LA + MOS
  - MOS – Explicit 10%
  - WLA = Point Source Allocations (all to MS4)
    - Urban Runoff (47%)
    - Commercial Nurseries w/ WDRs (4.5%)
    - Construction (28%)
  - LA = Non-point Source Allocations
    - NPS Agriculture (4.5%)
    - Open Space (14%)
    - Channels and Streams (2%)

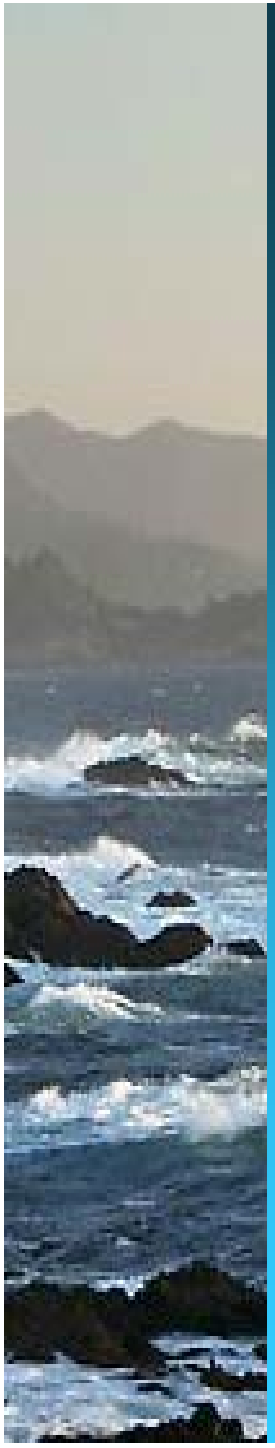
# TMDL Allocations





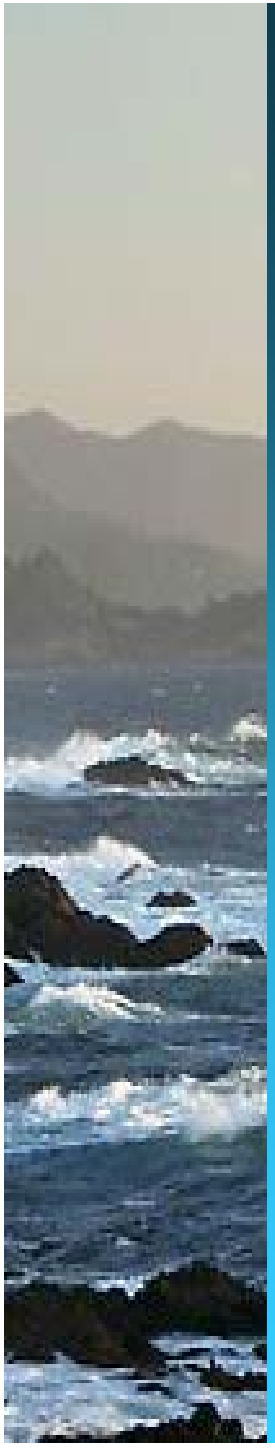
# Proposed Implementation Plan

- Source control activities to reduce/eliminate any active sources of OC pesticides and PCBs
  - Assess remaining “reservoir” of OCs in undeveloped lands in the watershed;
  - Estimate potential for pollutant discharges to receiving waters versus recirculation of existing contaminated bed sediments



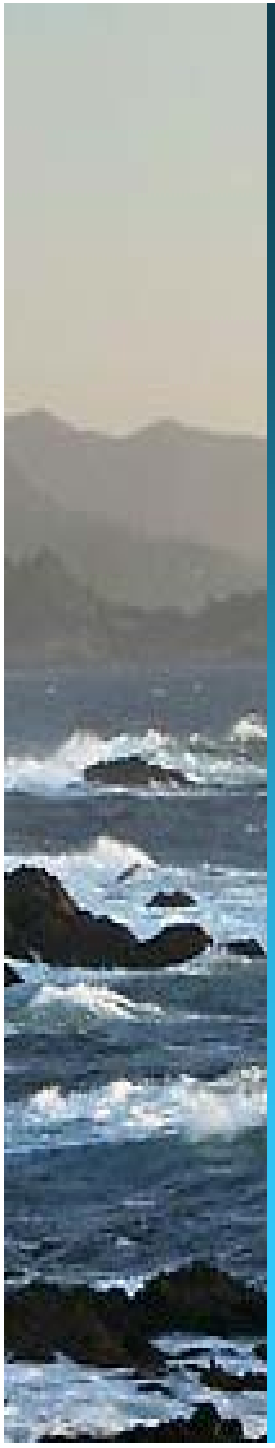
# Proposed Implementation Plan

- Implement and evaluate agricultural best management practices
  - Develop Waiver of WDRs for NPS agriculture
- Implement and evaluate construction best management practices
  - Sampling and analysis of construction discharges containing potentially-contaminated soils



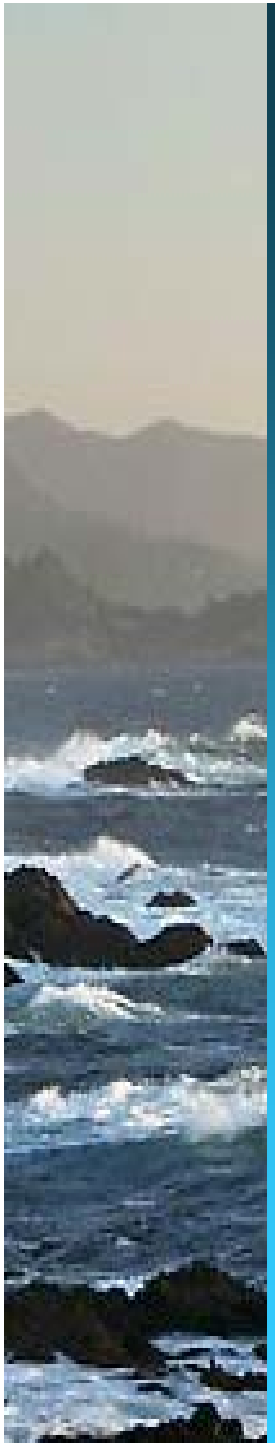
# Proposed Implementation Plan

- MS4 – Urban WLA
  - Permit will be modified to incorporate WLA's upon renewal
  - Encompasses developed urban areas as well as construction activities and agriculture point sources that can potentially discharge to the MS4
  - Latest revision to MS4 permit resulted in greater local oversight of new development and redevelopment; permit required the MS4 permittee and copermittees to:
    - Review/revise local plans, policies and ordinances
    - Conduct inspections of construction sites and nurseries
    - Conduct study of erosion control BMPs and formulate a "county-preferred" list



# Proposed Implementation Plan

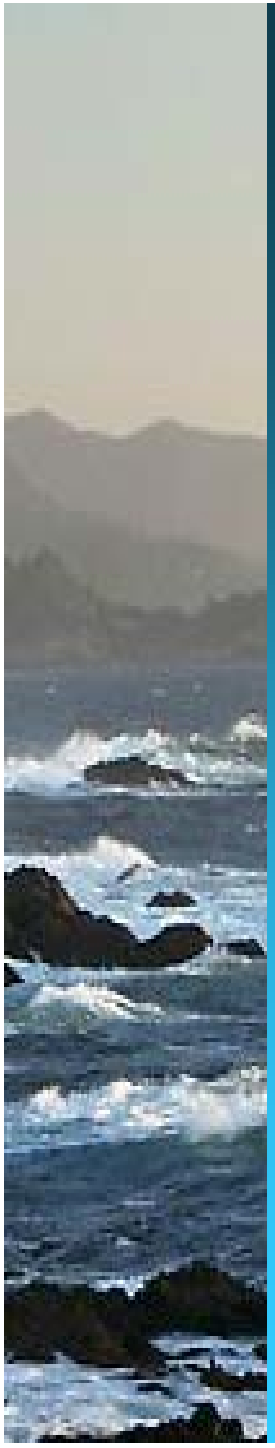
- MS4 Requirements (continued)
  - Evaluate whether current strategies are adequate to meet WLAs
    - Identify Construction BMPs and associated pollutant control effectiveness that demonstrate the WLAs will be attained
    - Submit a WLA compliance plan and schedule that demonstrate how the WLA will be implemented



# Proposed Implementation Plan

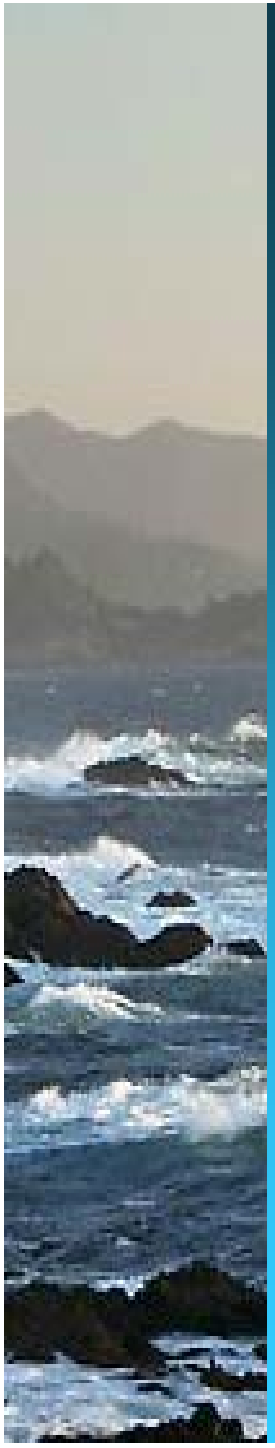
## MS4 Requirements (continued)

- Ensure developers made aware of TMDL compliance issues early in planning process (e.g., Conditions of Approval). Notification to developers to include:
  - Where applicable, the need to sample for nonvisible pollutants in construction site discharges (i.e., OCs in storm water runoff from sites previously in agricultural land use) per requirements of existing storm water permit for construction activities



# Proposed Implementation Plan

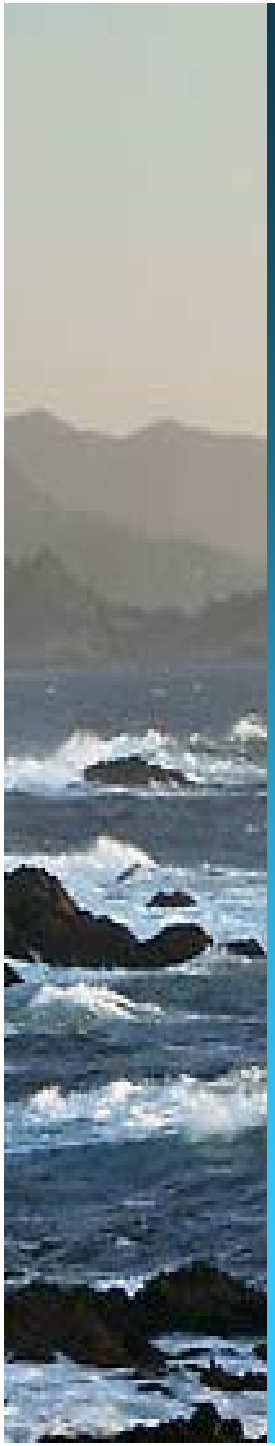
- MS4 Requirements (cont'd)
  - Requirement for SWPPP to provide discussion of how selected BMPs and their implementation will ensure the MS4 will achieve WLAs for the OCs TMDLs



# Proposed Implementation Plan

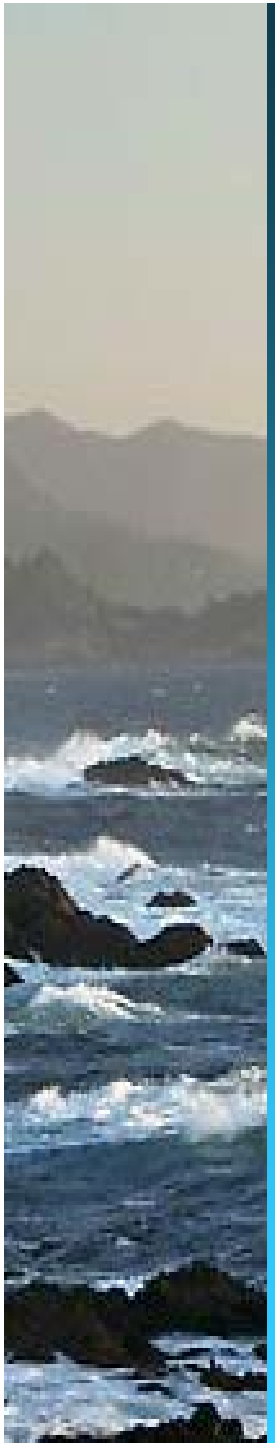
## MS4 Requirements (continued)

- Monitoring
  - Develop and implement applicable toxics monitoring elements into NPDES water quality monitoring program
  - Continuing monitoring activities to measure OCs loads within the watershed
  - Document trends (especially fish tissue concentrations), potential hot spots in the creek and/or bay to be remediated, areas/sources that need additional control measures



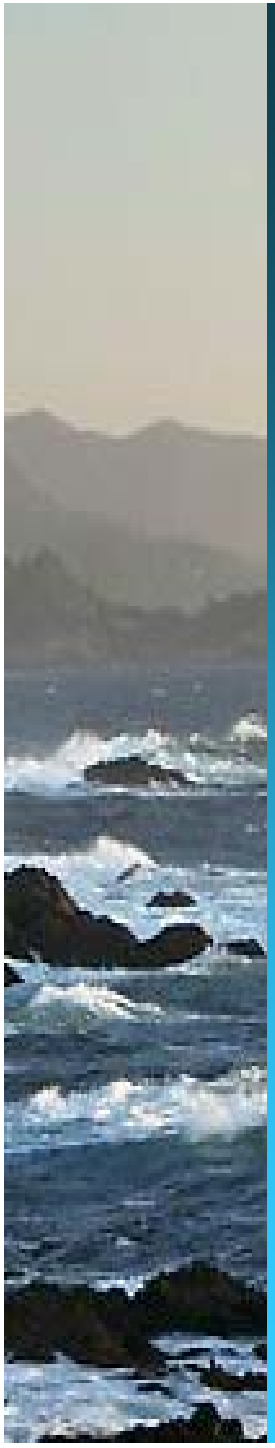
# Proposed Implementation Plan

- Monitored Natural Recovery
  - Lines of evidence to be considered (Magar and Wenning, 2006. Integ. Environ. Assess. Manage. 2:66-74)
    - Documentation of source control
    - Evidence of contaminant burial and reduction of surface sediment concentrations
    - Measurement of surface sediment mixing to estimate active benthic layer



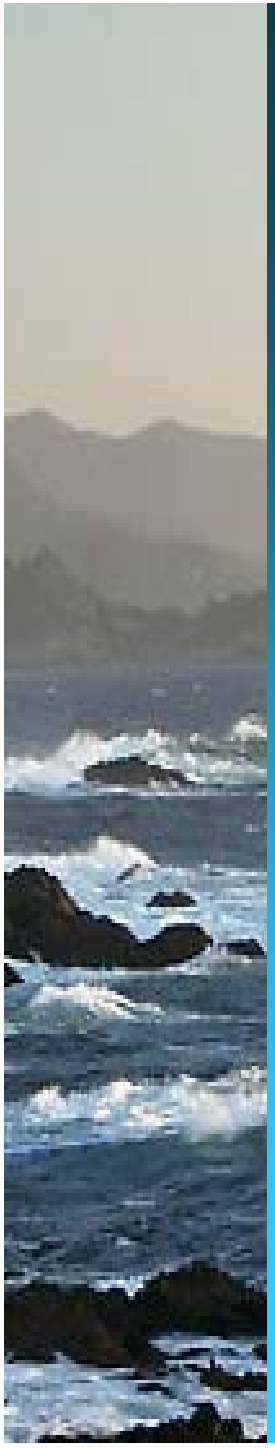
# Proposed Implementation Plan

- Natural Recovery (cont'd)
  - Measurement of sediment stability to assess risk of contaminant resuspension
  - Evidence of contaminant transformation and risk attenuation.
  - Modeling of long-term recovery, including surface water, sediment and biota.
  - Monitoring ecological recovery and long-term risk reduction
  - Knowledge of future site use and institutional controls (e.g., dredging).



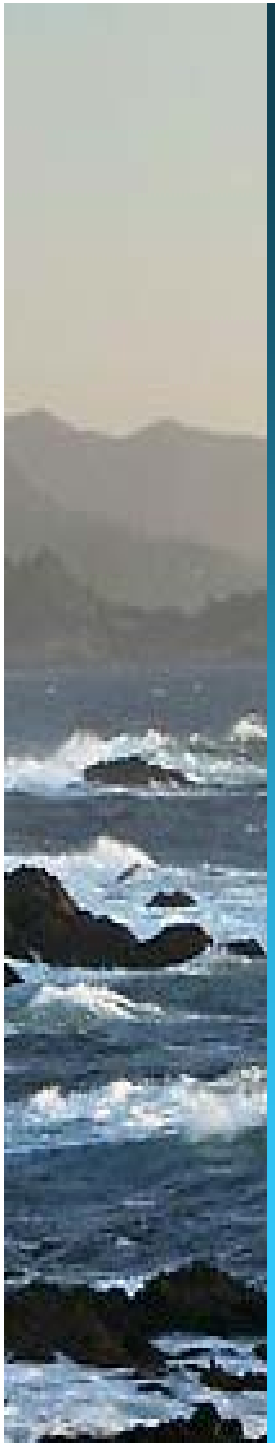
# Proposed Implementation Plan

- Monitoring/research studies
  - County of Orange, PRISM grant ($188,254)
    - Measure existing loads of OCs
  - SCCWRP, PRISM grant ($185,155)
    - Source analysis
    - Measurement of air deposition
  - SFEI, Food Web model and BSAFs
    - Part of work of Sediment Quality Objectives Task Force
  - SCCWRP, Fish Food Web Analysis ($253,532)
    - Predator/prey evaluation
  - RMA – Sediment transport model



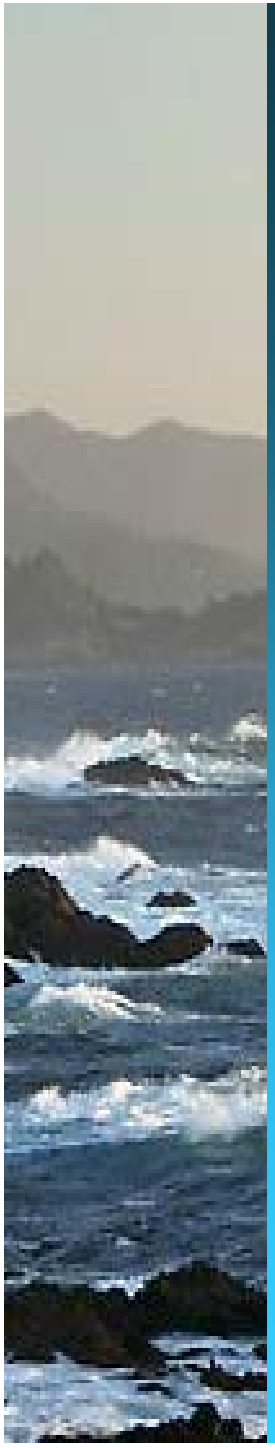
# Special Studies Needed

- Assess and quantify sources from open space
- Assess and quantify sources from channel/stream erosion
- Evaluate risk to aquatic life and wildlife in San Diego Creek and tributaries due to OCs
- Identify cause of sediment toxicity in Newport Bay and San Diego Creek



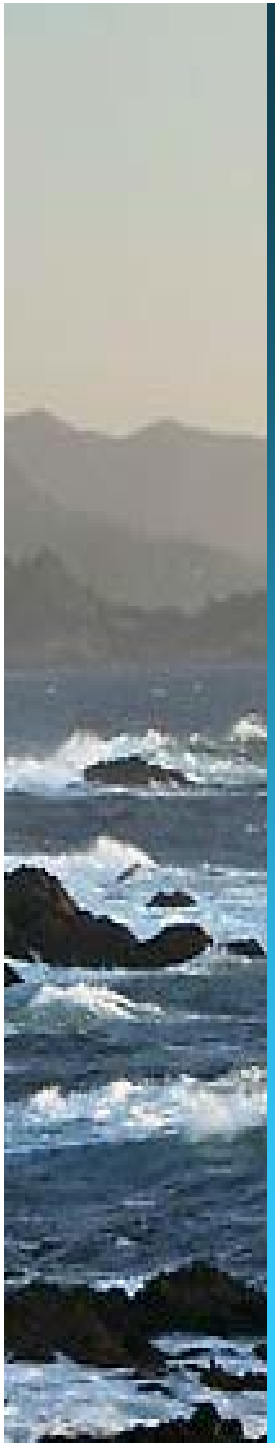
# Proposed Implementation Plan

- Study results may lead to development of site-specific sediment quality objectives and refinement of TMDL targets
  - Identify most sensitive species
  - Evaluate food web structure for that species
  - Determine BSAFs/BAFs that will lead to identification of protective sediment target
  - Performed in whole or in part through contract or TAC
  - Monitoring results may lead to TMDL revisions and/or de-listing for certain of the OCs constituents in the next phase of the TMDL



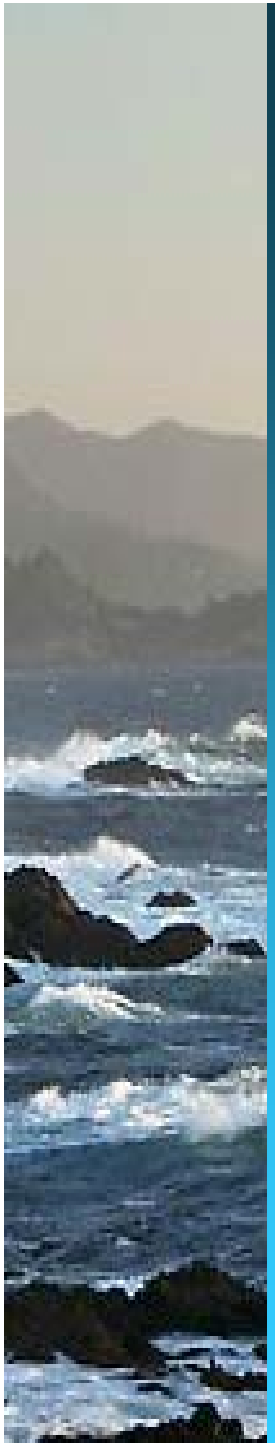
# Proposed Implementation Plan

- Implementation & compliance tied to sediment TMDLs
  - Revisions to the sediment TMDLs may trigger revisions to the OCs TMDLs
  - Revisions to sediment TMDLs anticipated in 2007



# Proposed Implementation Plan

- Compliance schedule
  - Tied to sediment TMDLs compliance
    - 10-year running average (1999-2009)
    - Reevaluate in next listing cycle or triennial review



# Contact

- We encourage your input and issues to consider with respect to CEQA
- Send comments to:

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